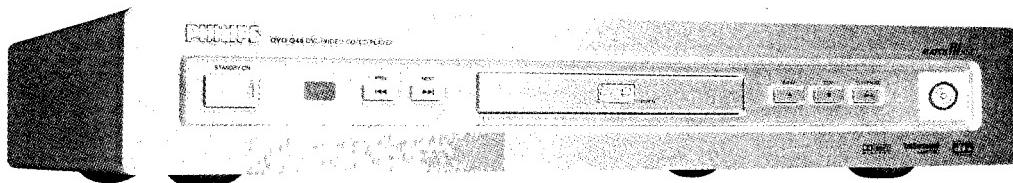


# Service

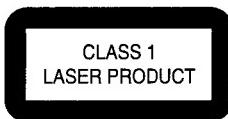
# Service

# Service



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# Service Manual



## Contents

	Page
1 Technical Specifications And Connection Facilities	2
2 Warnings, Laser Safety Instructions And Notes	3
3 Directions For Use	6
4 Mechanical Instructions And Exploded Views	16
5 Diagnostic Software Descriptions And Troubleshooting	21
6 Block and Wiring Diagram	
Block Diagram	33
Wiring Diagram	34
7 Electrical Diagrams And Print-Layouts	
Power Supply Unit STEP 2001	35
A/V Board Video (Diagram A1)	38
A/V Board Audio 1 (Diagram A2)	39
A/V Board Audio 2 (Diagram A3)	40
Control Panel (Diagram C)	45
Display Panel (Diagram D)	48
DTS Panel: Video (Diagram D1)	51
DTS Panel: DAIO (Diagram D2)	52
DTS Panel: Decoder (Diagram D3)	53
High Quality YUV (Diagram P2)	56
Single SCART (Diagram SS)	59
Diagram PWB	36-37
8 Electrical Alignments	63
9 Circuit Descriptions And List Of Abbreviations	63
10 Spare Part List	69
	71

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# PHILIPS

# 1. Technical Specifications

## Specifications

English

### PLAYBACK SYSTEM

DVD Video	
Video CD & SVCD	
CD (CD-Recordable and CD-Rewritable)	
DVD+RW	
MP3	

### OPTICAL READOUT SYSTEM

Laser type	Semiconductor AlGaAs
Numerical Aperture	0.60 (DVD) 0.45 (VCD/CD)
Wavelength	650 nm (DVD) 780 nm (VCD/CD)

### DVD DISC FORMAT

Medium	Optical Disc
Diameter	12cm (8cm)
Playing time (12cm)	One layer      2.15 h* Dual layer    4 h* Two side      4.30 h* Single layer Two side      8 h* Dual layer

### VIDEO FORMAT

DA Converter	10 bits (S-Video & CVBS) 10 bits, 54 MHz (Pr/Cr Pb/Cb Y Component Video Out)
Signal handling Digital Compression	Components MPEG2 for DVD, MPEG1 for VCD

### TV STANDARD

	(PAL/50Hz)	(NTSC/60Hz)
Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

### DVD

Horizontal Resolution	720 pixels	720 pixels
Vertical Resolution	576 lines	480 lines

### VCD

Horizontal Resolution	352 pixels	352 pixels
Vertical Resolution	288 lines	240 lines

### VIDEO PERFORMANCE

Video output	1Vpp into 75 ohm
S-Video output	Y:1Vpp into 75 ohm C:0.3Vpp into 75 ohm
Component video output	Y:1Vpp into 75 ohm Pb/Cb Pr/Cr:0.7Vpp into 75 ohm
RGB (SCART) output	0.7Vpp into 75 ohm
Black Level Shift	On/Off
Video Shift	Left/Right

### AUDIO FORMAT

Digital	MPEG DTS/Dolby Digital PCM	Compressed Digital 16, 20, 24 bits fs, 44.1, 48, 96 kHz MPEG Audio L3
---------	----------------------------------	--

### Analog Sound Stereo

Dolby Pro Logic downmix from Dolby Digital multi-channel sound	
Full decoding of Dolby Digital and DTS multi-channel surround sound	
3D Sound (TruSurround) for virtual 5.1 channel sound on 2 speakers	

### AUDIO PERFORMANCE

DA Converter	24 bits
DVD	fs 96 kHz      4 Hz - 44 kHz fs 48 kHz      4 Hz - 22 kHz
Video CD	fs 44.1 kHz      4 Hz - 20 kHz
CD	fs 44.1 kHz      4 Hz - 20 kHz
Signal-Noise (1kHz)	110 dB
Dynamic Range (1kHz)	100 dB
Crosstalk (1kHz)	110 dB
Distortion and Noise (1kHz)	98 dB

Specifications subject to change without prior notice

### CONNECTIONS

SCART	Euroconnector
Y Output	Cinch (green)
Pb/Cb Output	Cinch (blue)
Pr/Cr Output	Cinch (red)
S-Video Output	Mini DIN, 4 pins
Video Output	Cinch (yellow)
Audio L+R output	Cinch (white/red)

### 6 Channel Analog Output

Audio Front Left/Right	Cinch (white/red)
Audio Surround Left/Right	Cinch (white/red)
Audio Centre	Cinch (blue)
Audio Subwoofer	Cinch (black)
Digital Output	1 coaxial, 1 optical

IEC958 for CDDA / LPCM

IEC1937 for MPEG1/2, Dolby Digital and DTS

### CABINET

Dimensions (w x h x d)	435 x 72.5 x 291 mm
Weight	Approximately 3 Kg

### GENERAL FUNCTIONALITY

Stop / Play / Pause	
Fast Forward / Backward	
Time Search	
Step Forward / Backward	
Slow Motion	
Title / Chapter / Track Select	
Skip Next / Previous	
Repeat (Chapter / Title / All) or (Track / All)	
A-B Repeat	
Shuffle	
Scan	
New enhanced user graphical interface	
Perfect Still with digital multi-tap filter	
Zoom (x1.33, x2, x4) with picture enhancement	
Smart Picture for convenient personal Colour setting	
Digital Crystal Clear	
NTSC/PAL Conversion	
Screen Saver (Dim 75% after 15 minutes)	
5.1 channels user defines speaker settings	
3D Sound (TruSurround)	
Virtual Jog Shuttle	
Audio and video bit rate indicator	
Display Dim	
Beep	
Wake up Timer	
PCM Output	

### DVD FUNCTIONALITY

Multi-angle Selection	
Audio Selection (one out of maximum eight languages)	
Subtitles Selection (one out of maximum 32 languages)	
Aspect Ratio conversion (16:9, 4:3 Letterbox, 4:3 Pan Scan)	
Parental Control and Child Lock	
Disc Menu support (Title Menu and Access Control)	
Resume (5 discs) after stop / standby	
Programming Titles/chapters with Favorite Track Selection	

### VIDEO CD FUNCTIONALITY

Playback Control for VCD 2.0 discs	
Child Lock	
Resume (5 discs) after stop / standby	

Programming Tracks with Favorite Track Selection

### AUDIO CD FUNCTIONALITY

Time Display (Total / Track / Remaining Track Time)	
Full audio functionality with remote control	

Programming with Favorite Track Selection

### MP3 FUNCTIONALITY

Time Display (Track)	
Album and Track Selection	
Repeat (Disc / Album / Track)	

\* typical playing time for movie with 2 spoken languages and 3 subtitle languages

## 2. Warnings And Laser Safety Instructions



### WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

### ESD



### NL

### WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor elektrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.



### ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.



### WARNUNG

Alle IC und viele andere Halbleiter sind empfindlich gegen elektrostatische Entladungen (ESD). Unsorgfältige Behandlung bei der Reparatur kann die Lebensdauer drastisch vermindern. Sorgen Sie dafür, das Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.



### AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.



Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.



Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt terug gebracht en dat onderdelen, identiek aan de gespecificeerde worden toegepast.



Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.



Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden. Für Reparaturen sind Original-Ersatzteile zu verwenden.



Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati pezzi di ricambio identici a quelli specificati.

### SHOCK, FIRE HAZARD SERVICE TEST:

**CAUTION:** After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom, Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before power is applied, and verified before return to user/customer. Ref.UL Standard NO.1492.

### NOTE ON SAFETY:

Symbol **▲** : Fire or electrical shock hazard. Only original parts should be used to replace any part with symbol **▲**. Any other component substitution(other than original type), may increase risk or fire or electrical shock hazard.

## LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

### LASER DEVICE UNIT

Type:	SemiconductorlaserGaAlAs
Wave length:	650 nm (DVD) 780 nm (VCD/CD)
Output Power:	7 mW (DVD) 10 mW (VCD/CD)
Beam divergence:	60 degree

**CLASS 1  
LASER PRODUCT**

**USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURE OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.**

### AVOID DIRECT EXPOSURE TO BEAM

### WARNING

The use of optical instruments with this product will increase eye hazard.  
Repair handling should take place as much as possible with a disc loaded inside the player

### WARNING LOCATION: INSIDE ON LASER COVERSHEILD

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM  
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING  
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÄR DEKSEL ÄPNES UNNGÅ EKSPOSERING FOR STRÅLEN  
WARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN  
VARO! AVATTAEssa OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN  
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRÄHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN  
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM  
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

### Warning for powersupply on position 1005

**The primary side of the powersupply including the heatsink carries live mains voltage when the player is connected to the mains even when the player is swiched off !**

This primary area is not shielded so it is possible to touch copper tracks and/or components when servicing the player. Service personnel have to take precautions to prevent touching this area or components in this area .

The primary side of the powersupply has been indicated with a lightning stroke and a stripe-marked printed on the printed wiring board

## 2.1 Notes

### 2.1.1 DVD-Module

For repair of the DVD-module SD3, the service manual 3122 785 11010 has to be used.

### 2.1.2 ComPair

For assistance with the repair process of the monoboard an electronic Fault finding guidance has been developed , this program is called ComPair.

This ComPair program is available on CDROM.

The Version of the CDROM for repair of the monoboard is V1.3 or higher and can be ordered with codenumber : 4822 727 21637.

This is an update CDROM , so when the COMPAIR CDROM is used for the first time , one has to install the ComPair ENGINE CDROM V1.2 first.

The V1.2 CDROM can be ordered with codenumber 4822 727 634 and has to registered after installation , the procedure for registration is explained in the help file of the program and in the booklet from the CDROM.

The cable to connect the monoboard with a PC can be ordered with codenumber 3122 785 90017.

All the hardware and software requirements of the systems necessary for working with ComPair is described on the CDROM.

## Introduction

### Philips DVD Video Introduction

Your Philips DVD Video player will play digital video discs conforming to the universal DVD Video standard. The unique features on DVD Video, such as selection of sound track, subtitle languages and different camera angles (again depending on the disc), are all supported. In addition to DVD Video discs, you will be able to play all Video CDs and Audio CDs.

#### DVD Video

You will recognize DVD Video discs by the logo shown. Depending on the material on the disc (a movie, video clips, a drama series, etc.) the disc may have one or more Titles.



#### Video CD

You will recognize Video CDs by the logo shown.



#### Super Video CD (SVCD)

SVCDs are based on the SuperVCD I/O Standard, referring to the Standard of Electronics Industry of the People's Republic of China.



#### Audio CD

Audio CDs contain music tracks only. You will recognize Audio CDs by the logo shown.

#### MP3 (MPEG Audio Layer 3)

This player supports the MP3 format which contains compressed music tracks.

##### Note:

– Only the first session of multisession discs is supported.

## Unpacking

First check and identify the contents of your DVD Video player package.

You should have the following items.

- DVD Video player
- AC power cord
- Remote Control with batteries
- Audio cable
- CVBS Video cable
- SCART cable
- Instructions for use

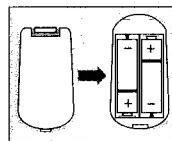
If any item is damaged or missing, contact your retailer or Philips.

Keep the packaging material for future transportation.

### Remote Control Battery Installation

- Insert batteries as indicated inside the battery compartment.

**Caution: Do not mix old and new batteries. Never mix different types of batteries (standard, alkaline, etc.).**



## Environmental Information

- Your system consists of materials that can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

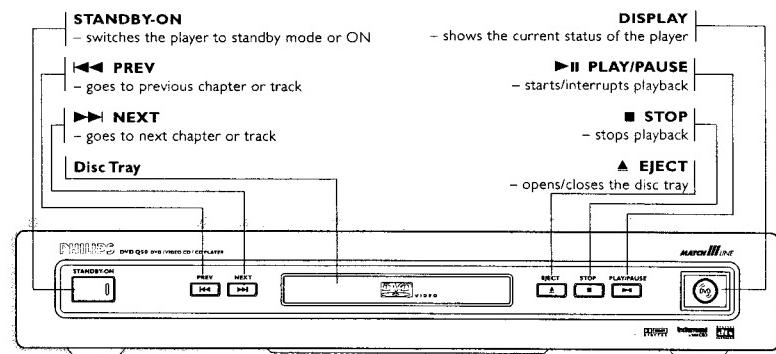
## Safety Information

- Do not expose the system to excessive moisture, rain, sand, or heat sources.
- Place the player on a firm, flat surface.
- Keep the player away from domestic heating equipment and direct sunlight.
- In a cabinet, allow about 2.5 cm (1 inch) of free space all around the player for adequate ventilation.
- If the DVD Video player cannot read CDs/DVDs correctly, use a commonly available cleaning CD/DVD to clean the lens before taking the DVD Video player to be repaired. Other cleaning methods may destroy the lens. Always keep the tray closed to avoid dust on the lens.
- The lens may cloud over when the DVD Video player is suddenly moved from cold to warm surroundings. Playing a CD/DVD is not possible then. Leave the power on for about one hour with no disc in the unit until normal playback is possible.



## Functional Overview

### Front and Rear Panels



#### MAINS (AC Power)

– connect to power source

#### COAXIAL (Digital audio out)

– connect to digital (coaxial) audio equipment

#### OPTICAL (Digital audio out)

– connect to digital (optical) audio equipment

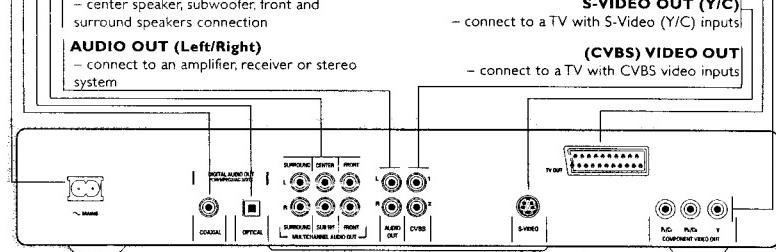
#### MULTICHANNEL AUDIO OUT

(For connection to a multichannel receiver)

– center speaker, subwoofer, front and surround speakers connection

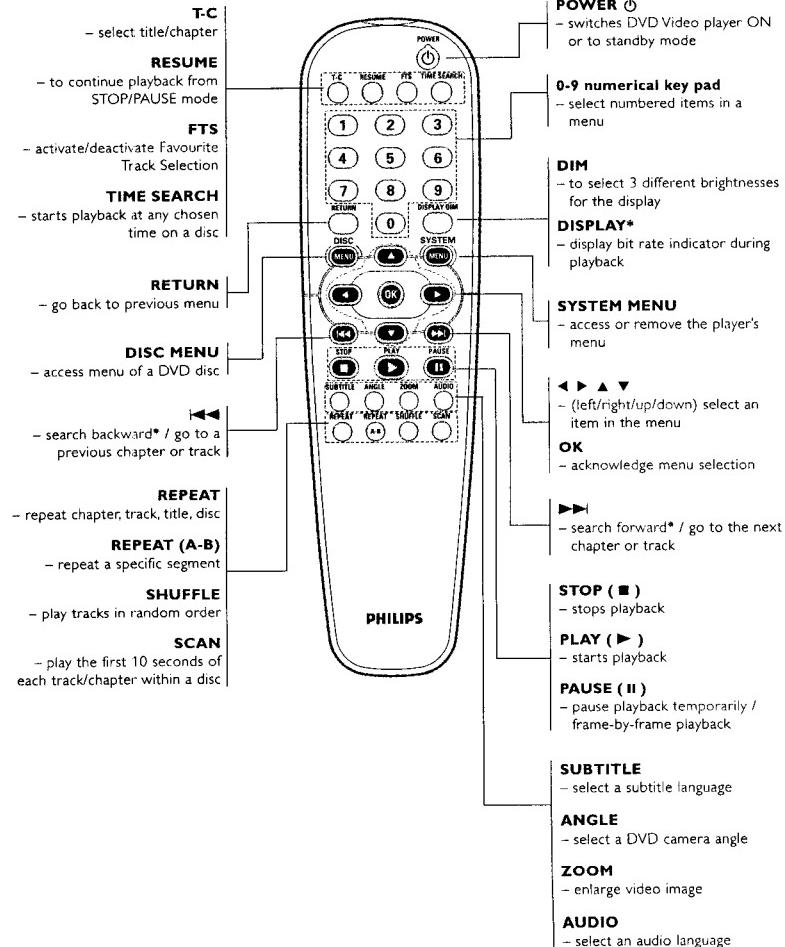
#### AUDIO OUT (Left/Right)

– connect to an amplifier, receiver or stereo system



**Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.**

## Remote Control



\* Press and hold key for about two seconds

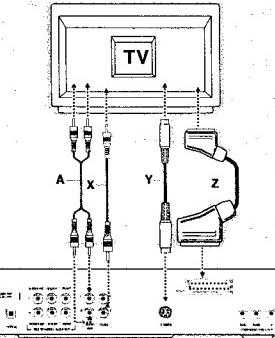
## Preparation

### General Notes

- Depending on your TV and other equipment you wish to connect, there are various ways you could connect the player. Use only one of the connections described below.
- Please refer to the manuals of your TV/VCR, Stereo System or other devices as necessary to make the best connections.
- For better sound reproduction, connect the player's audio out jacks to the audio in jacks of your amplifier/receiver; stereo or audio/video equipment. See 'Connecting to Optional Equipment'.

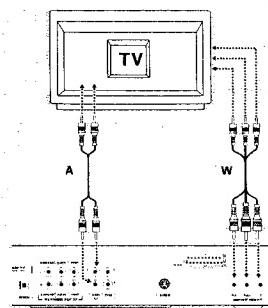
#### Caution:

- Make sure the DVD player is connected directly to the TV. Set the TV to the correct video input channel.
- Do not connect the player's audio out jack to the phono jack of your audio system.
- Do not connect your DVD player to the TV via your VCR. The DVD image could be distorted by the copy protection system.
- After all connections are made, connect the AC power cord to an AC power outlet in your home.



### Component Video (Pr/Cr Pb/Cb/Y) connection

- Connect the Pr/Cr Pb/Cb/Y VIDEO OUT jacks on the DVD player to the corresponding jacks on the TV using an optional Pr/Cr Pb/Cb/Y cable (W).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).



### S-Video (Y/C) connection

- Connect the SCART to the corresponding connector on the TV using the SCART cable supplied (Z).
- If your TV is not equipped with a SCART you can select one of the following alternative connections:

### CVBS connection

- Connect the Y/C S-VIDEO OUT jack on the DVD player to the S-Video in jack on the TV using an optional S-Video cable (Y).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).

### CVBS connection

- Connect the (CVBS) VIDEO OUT jack on the DVD player to the video in jack on the TV using the video cable supplied (X).
- Connect the Left and Right AUDIO OUT jacks of the DVD player to the audio left/right in jacks on the TV (A).

## Connecting to Optional Equipment

### Connecting to an amplifier equipped with two channel analog stereo or Dolby Surround

- 1 Connect the Left and Right audio out jacks of the DVD player to the audio left and right in jacks on your amplifier, receiver or stereo system, using the optional audio cable (A).

Note:

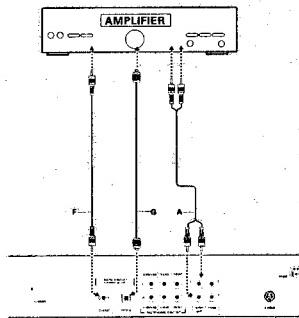
- You cannot use the MP3 function with the Digital Out connectors.

### Connecting to an amplifier equipped with two channel digital stereo (PCM) or to an Audio/Video receiver equipped with a multi-channel decoder (Dolby Digital™, MPEG 2 and DTS)

- 1 Connect the player's digital audio out jack (optical G or coaxial F) to the corresponding jack on your amplifier. Use an optional digital (optical G or coaxial F) audio cable.
- 2 You will need to activate the player's digital output (see 'Personal Preferences').

#### Digital Multi-channel sound

The digital multi-channel connection provides the best sound quality. For this you need a multi-channel A/V receiver that supports one or more of the audio formats supported by your DVD player (MPEG 2, Dolby Digital™ and DTS). Check the receiver manual and the logos on the front of the receiver.



**Warning:**

Due to DTS Licensing agreement, the digital output will also be in DTS digital out when DTS audio stream is selected.

## NTSC/PAL Settings

You can switch the NTSC/PAL setting of the DVD player to match the video signal of your TV. This setting only affects the television's on-screen display that shows the stop and setup modes. You may select either NTSC or PAL. To change the DVD player setting to PAL or NTSC, follow the steps below.

- 1 Unplug the DVD player from the mains.
- 2 Press and hold ■ and ►► on the front of the DVD player. While holding ■ and ►►, plug in the mains.
- 3 After PAL or NTSC appears on the display of the DVD player, release ■ and ►► at the same time. The PAL or NTSC indicator that appears on the display indicates the current setting.
- 4 To change the setting, press ►► within three seconds. The new setting (PAL or NTSC) will appear on the display.

## NTSC/PAL Conversion

This player is equipped with a NTSC/PAL conversion feature to convert the video output of the disc to match your TV system. The conversions supported are as below:

Disc Type	Format	Output format Selected mode		
		NTSC	PAL	AUTO
DVD	NTSC	NTSC	PAL	NTSC
	PAL	Not Supported		PAL
VCD	NTSC	NTSC	PAL	NTSC
	PAL	NTSC	PAL	PAL

- 1 In the Preference Menu, select **TV System**.
- 2 Press ▲ or ▼ to select PAL, NTSC or AUTO.  
**Notes:**
  - AUTO can only be selected when using a TV that has both NTSC and PAL systems.
  - This is applicable for CVBS output on cinch and SCART only
  - Slight picture distortions may occur due to this conversion. This is normal. Thus, the AUTO format is most suitable for the best picture quality.

## General Explanation

### About this manual

This manual gives the basic instructions for operating the DVD player. Some DVDs require specific operation or allow only limited operation during playback. When this occurs, the symbol X appears on the TV screen, indicating that the operation is not permitted by the player or the disc.

### Remote control operation

- Unless stated, all operations can be performed by the remote control. Always point the remote control directly at the player, making sure there are no obstructions between the remote and the player. Corresponding keys on the front panel of the player can also be used.

### Menu bar operation

- A number of operations can be done with the menu bar on the screen. The menu bar icons can be accessed by pressing the cursor keys on the remote control.
- Pressing SYSTEM MENU while the menu bar is displayed will clear the menu bar from the screen.
- The selected item will be highlighted, and the appropriate cursor keys to operate it will be displayed below the icon.
- The symbols < or > indicate more items are available at the left/right of the menu bar. Press ◀ or ▶ to select these items.



## Initial Setup (Virgin Mode)

### General

In 'Initial Setup' you may have to set your preferences for some of the player's features. (not applicable for all models)

### Operation

After switching on the player for the very first time, the 'Initial Setup Screen' will appear. The menu for the first item to be set is displayed and the first option is highlighted.

- Use the **▼ ▲** keys to go through the options in the menu. The icon of the selected option will be highlighted.
- Use OK to confirm your selection and to go to the next menu.

#### Note:

- Preferences have to be set in the order of which the item menus will appear on the screen.
- The 'Initial Setup' screen will only disappear after the settings for the last item have been confirmed.
- If any keys other than **▼ ▲** or OK are pressed, **X** will appear on the screen.
- If the player is switched off while setting personal preferences, all preferences have to be set again after switching the player on again.

### The following items may have to be set in Initial Setup:

#### Menu language

You can choose from different languages. The On Screen Menus will be displayed in the language available on the player.

#### Audio language

You can choose from different languages. If available on the disc, the player will play the audio in the selected language. If the selected language is not available, speech will revert to the first spoken language on the disc.

#### Subtitle language

You can choose from different subtitle languages. If available on the disc, subtitles will be in the language chosen. If the selected language is not available, subtitles will revert to the first subtitle language on the disc.

### TV Shape

If you have a wide screen (16:9) TV, select 16:9. If you have a regular (4:3) TV, select 4:3. If you have a 4:3 TV, you can also select between: Letterbox for a wide-screen picture with black bars top and bottom, or Pan Scan, for a full-height picture with the sides trimmed. If a disc supports the format, the picture will be shown accordingly.

### Country

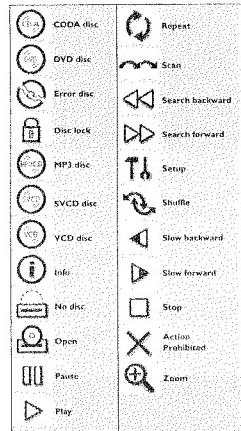
Select your country. This is used as input for the 'Parental Control' feature (see 'Access Control').

#### Note:

- All these items may have to be set during 'Initial Setup'. After that, they can always be changed in the Personal Preferences Menu.

### Display on Front Panel

Various icons will appear on the front panel display depending on the current status of the player:



### Menu Bar on TV Screen

As there are multiple menu bars, the items on the menu bar are arranged according to usage and availability of direct access keys. Pressing the SYSTEM MENU keys repeatedly will toggle through menu bar 1, menu bar 2, menu bar 3 and OFF.

#### Menu bar 1

- Personal Preferences
- Subtitle Language
- Audio Language
- Colour Setting (Smart Picture)
- Sound

#### Menu bar 2

- Step by step playback
- Slow motion
- Fast motion
- Angle
- Zoom

#### Menu bar 3

- Title
- Chapter
- Time Search
- Favorite Track Selection (FTS)
- Wake up Timer

### Temporary Feedback Field Icons

- Scan
- Repeat All
- Repeat Title
- Repeat Track
- Repeat Chapter
- Shuffle
- Shuffle Repeat
- Repeat A to end
- Repeat A-B
- Angle
- Child Lock On
- Child Safe
- Resume
- Action prohibited

### Personal Preferences

You can set your own personal preferences on the player.

#### General operation:

- Press SYSTEM MENU on the remote control.
- Select **■** in the menu bar:  
→ The Personal Preferences menu appears.
- Use the **◀ ▶ ▲ ▼** keys to toggle through the menus, submenus and submenu options.  
→ When a menu item is selected, the cursor keys (on the remote control) to operate the item are displayed next to the item.
- Press OK to confirm and return to the main menu.  
The following items can be adapted:

#### Picture

##### - TV Shape

If you have a wide screen (16:9) TV, select 16:9. If you have a regular (4:3) TV, select 4:3. If you have a 4:3 TV, you can also select between: Letterbox for a wide screen picture with black bars at the top and bottom of the screen, or Pan Scan, for a full-height picture with the sides trimmed. If a disc supports the format, the picture will be shown accordingly.

##### - Black level shift (NTSC users only)

Select ON for adapting the Colour dynamics to obtain richer contrasts.



##### - Video shift

The factory centers the video on your TV screen. Use this setting to personalize the position of the picture on your TV by moving it to the left or right.





Help text



#### - Bit Rate Indicator

Press and hold **DISPLAY DIM** key for 2 seconds. When activated, the bit rate for video and audio, as well as the total bit rate is displayed. This is only applicable during playback of DVD and SVCD discs.



#### - Colour settings

You can select one of five predefined sets of colour settings and one set (Personal) which you can define yourself.



#### - Personal colour

Allows you to fine-tune the selected colour settings saturation, brightness and contrast.

#### - DCC (on Pr/Cr Pb/Cb Y Component Video Out only)

**Digital Crystal Clear** (DCC) allows you to fine-tune the following parameters on the progressive scan component output:

- **Gamma** - allows you to adjust the intensity of the picture non-linearly. A positive value will allow you to bring out low level detail on dark scene while a negative value will emphasis on contrast.
- **Sharpness** - allows you to adjust sharpness of the picture.
- **Chroma Delay** - is where the Chroma (color) and luma (brightness) signal is out of synchronization. This allows you to adjust the advance delay of the chroma signal to yield a perfectly clear picture.

#### - TV System

Allows you to select between PAL, NTSC and AUTO mode depending on your TV.

Note:

– Refer to "NTSC/PAL Conversion".

#### Sound

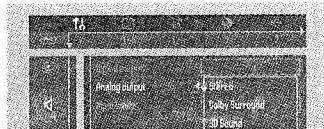
##### - Digital output

Factory setting ALL. This means coaxial and optical output is on. If you are not connecting to equipment with a digital input, change the setting to OFF. If your equipment doesn't include a digital multi-channel decoder, set the digital output to PCM only (Pulse Code Modulation).



#### - Analog output

Select Stereo, Dolby Surround, 3D Sound (Tri-Sound) or multichannel output to match your system's playback capability.



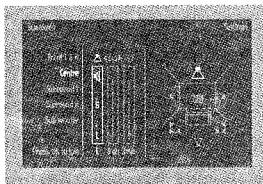
#### - Night Mode

Optimizes the dynamics of the sound for low volume playback.

#### - Speaker settings

Allows you to select speaker settings, volume balance and delay time and to test the speaker settings.

Speaker settings are only active on the Analog, Multi-Channel Output. (See appendix)



#### - PCM Output

Allows to select PCM digital output between 48kHz and 96kHz. When 48kHz has been selected, 96kHz (if available on disc) PCM data stream will be converted to 48kHz.

#### - Karaoke vocal

Put this setting to ON only when a multi-channel karaoke DVD is being played. The karaoke channels on the disc will then be mixed into a normal stereo sound.

#### Language

Select the required Menu, Audio and Subtitle language. Audio language and Subtitle language can also be adapted using the Menu bar.

#### Features

##### - Access Control

Access Control contains the following features:  
Child Lock - When Child Lock is set to ON, a 4-digit code must be entered in order to play discs.  
Parental control - Allows the conditional viewing of DVDs containing Parental Control information (see 'Access Control').

##### - Status Window

Displays the current status of the player and appears with the menu bar. When disc playback is stopped, it is displayed with the 'Temporary Feedback Field' in the default screen. See 'On-Screen Display' information.  
The factory setting is ON. Select OFF to suppress display of the Status Window.



##### - DIM

You can select the desired brightness for the front panel display.

- Normal brightness will appear on the display when you press **DISPLAY DIM** on the remote control.
- Medium brightness will appear on the display when you press **DISPLAY DIM** a second time on the remote control.
- Low brightness will appear on the display when you press **DISPLAY DIM** a third time on the remote control.
- Brightness will turn OFF when you press **DISPLAY DIM** a fourth time on the remote control.



#### - Help text

When set to ON, help text describes the icons selected. Select OFF if you no longer require the help text.

#### -- Low Power Standby

If this is set to ON, the player will go in low-power standby when the standby button is pressed (front panel or remote control).

#### - Beeper

The beeper can be set to ON or OFF.

#### - PBC (Playback Control)

The Playback Control can be set to ON or OFF.

#### - Smart Power OFF

Puts the set to standby after a predefined time. This can be set to ON or OFF.

## Operation



### Loading Discs

- Press EJECT on the front of the player to open the disc tray.
- Load your chosen disc in the tray, label side up.
- Press EJECT again to close the tray.  
→ REPB appears in the status window and on the player display, and playback starts automatically.

**Note:**

- If 'Child Lock' is set to ON and the disc inserted is not authorized, the 4-digit code must be entered and/or the disc must be authorized (see 'Access Control').

### Playing a DVD Video and Video CD

#### Playing a disc

- After inserting the disc and closing the tray, playback starts automatically. The status window of the player display shows the type of disc loaded.
- The disc may invite you to select an item from a menu. If the selections are numbered, press the appropriate numerical key; if not, use the **▼ ▲ ▶◀** keys to highlight your selection, then press OK.
- The number of the current title and chapter are displayed.
- Playback may stop at the end of the title and you may return to the DVD disc menu. To go to the next title, press **▶**.
- To stop playback, press **■**.  
→ The default screen will appear, giving information about the current status.
- You can resume playback from the point at which you stopped playback. Press **▶** when you see the Resume icon **▶** on the screen, press **▶** again.  
→ The RESUME feature applies not only to the disc in the player, but also to the last four discs you have played. Simply reload the disc and press RESUME on the remote control. Or, press **▶** when you see the Resume icon **▶** on the screen, then press **▶** again.
- Note:**  
→ DVDs may have a region code. Your player will not play discs that have a region code different from the region code of your player.



### General Features

**Note:**

- Unless stated, all operations described are based on remote control use. Some operations can be carried out using the menu bar on the screen.

#### Moving to another title/chapter

When a disc has more than one title or chapter, you can move to another title/chapter as follows:

- Press SYSTEM MENU, then select **2** or **3** in the menu bar.
- Press **▲** or **▼** to select a title/chapter.

#### Slow Motion

- Select **2** (SLOW MOTION) in the menu bar.
- Use the **▼** keys to enter the SLOW MOTION menu.  
→ Playback will pause.
- Use the cursor keys **◀▶** to select the required speed: -3, -1/2, -1/4 or -1/8 (backward), or +1/8, +1/4, +1/2 or +1 (forward).
- Select 1 to play the disc at normal speed again.
- If **II** is pressed, the speed will be set to zero (PAUSE).
- To exit slow motion mode, press **▶** or **▲**.



#### Still Picture and Frame-by-frame playback

- Select **2** (STEP) in the menu bar.
- Use the **▼** key to enter the step by step menu.  
→ Playback will pause.
- Use the cursor keys **◀▶** to select the previous or next picture frame.
- To exit step by step playback, press **▶** or **▲**.

You can also step forward by pressing **II** repeatedly on the remote control.



#### Scan

- Scanning plays the first 10 seconds of each chapter/track on the disc.
- Press SCAN.
  - To continue playback at your chosen chapter/track, press SCAN again or press **▶**.



### Search

- Select **2** (FAST MOTION) in the menu bar.
- Use the **▼** keys to enter the FAST MOTION menu.
- Use the **◀▶** keys to select the required speed: -32, -8 or -4 (backward), or +4, +8, +32 (forward).
- Select 1 to play the disc at normal speed again.
- To exit FAST MOTION mode, press **▶** or **▲**.

To search forward or backward through different speeds, you can also hold down **◀◀** or **▶▶**.



### Repeat

#### DVD Video Discs

##### Repeat chapter/title/disc

- To repeat the current chapter, press REPEAT.  
→ **Q** appears on the DVD player display.
- To repeat the current title, press REPEAT a second time.  
→ **Q** appears on the DVD player display.
- To repeat the entire disc, press REPEAT a third time.  
→ **Q** appears on the DVD player display.
- To exit Repeat mode, press REPEAT a fourth time.



#### Video CDs

##### Repeat track/disc

- To repeat the current track, press REPEAT.  
→ **Q** appears on the DVD player display.
- To repeat the entire disc, press REPEAT a second time.  
→ **Q** appears on the DVD player display.
- To exit Repeat mode, press REPEAT a third time.



### Repeat A-B

To repeat a specific portion of a title:

- Press REPEAT A-B at your chosen starting point.  
→ **Q** appears briefly on the DVD player display.
- Press REPEAT A-B again at your chosen end point.  
→ **Q** appears briefly on the DVD player display, and the repeat sequence begins.
- To cancel the sequence and continue regular playback, press REPEAT A-B.

### Shuffle

#### DVD Video discs

This shuffles the playing order of chapters within a title, if the title has more than one chapter.

- Press SHUFFLE during playback.  
→ SHUFFLE appears on the TV screen for about two seconds.
- To return to normal playback, press SHUFFLE again.



#### Video CDs

- Press SHUFFLE during playback.  
→ SHUFFLE appears on the TV screen for about two seconds.
- To return to normal playback, press SHUFFLE again.

### Time search

The Time Search function allows you to start playing at any chosen time on the disc.

- Select **2** (TIME SEARCH) in the menu bar.
- Press **▼**.  
→ Playback will pause.  
→ A time edit box appears on the screen, showing the elapsed playing time of the current disc.
- Use the numeric keys to enter the required start time. Enter hours, minutes and seconds from left to right in the box.  
→ Each time an item has been entered, the next item will be highlighted.
- Press OK to confirm the start time.  
→ The time edit box will disappear and playback starts from the selected time on the disc.



- Press SYSTEM MENU to remove the menu bar.

**Zoom**

- The Zoom function allows you to enlarge the video image and to pan through the enlarged image.
- Select (ZOOM).
  - Press **▲▼** to activate the ZOOM function and select the required zoom factor: 1.33 or 2 or 4.
  - Playback will pause.
  - The selected zoom factor appears below the Zoom icon in the menu bar, and Press OK to pan appears below the menu bar.
  - The picture will change accordingly.
  - Press OK to confirm the selection.
  - The panning icons appear on the screen.
  - Use the **◀▶▲▼** keys to pan across the screen.
  - When OK is pressed only the zoomed picture will be shown on the screen.
  - To exit ZOOM mode:
    - Press **▶** to resume playback.

**FTS-Video**

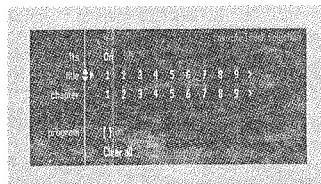
- The FTS-Video function allows you to store your favorite titles and chapters (DVD) and favorite tracks and indexes (VCD) for a particular disc in the player memory.
- FTS program can contain 20 items (titles, chapters etc.).
  - A programmed FTS will be placed on top of the list when playback is activated. When the list is full, a new program will replace the last program on the list.
  - The program can be selected and played at any time.

**Storing an FTS-Video Program**

- While playback is stopped, select **VIDEO FTS** in the menu bar.
- Press **▼** to open the menu.
- The **VIDEO FTS** menu appears.
- Press **▶** or **◀** to select ON or OFF.

**Storing titles/tracks**

- Press **▼** to select **TITLES**.
- Use **▶** and **◀** to select the required title.
- Press OK if you wish to store the entire title.
- The title number will be added to the list of selections.

**Storing chapters/indexes**

- Press **▼** on the selected title number.
- The title number will be marked and the highlight moves to the first available chapter number for this title.
- Use **▶** and **◀** to select the required chapter number.
- Press OK to confirm the selection.
- The title/chapter selection will be added to the list of selections.
- Press SYSTEM MENU to exit the **VIDEO FTS** menu.

**Erasing an FTS-Video Program**

- While playback is stopped, select **VIDEO FTS** in the menu bar.
- Use **▼** to select **PROGRAM**.
- Use **▶** and **◀** to select the required number.
- Press OK to erase the selection.
- Press SYSTEM MENU to exit.

**Erasing all selections**

- While playback is stopped, select **VIDEO FTS** in the menu bar.
- Use **▼** to select **CLEAR ALL**.
- Press OK.
- All selections will be erased.
- Press SYSTEM MENU to exit.

**Auto Wake-up Timer**

The wake-up timer allows your player to turn on after a preset time.

- Select in the menu bar.
- Press **▼**.
- Time edit box will appear.
- Use the **▲** or **▼** to select the sleep time. The maximum time you can select is 600 minutes. Selection is made by 30 minutes steps each time.
- Press OK to confirm the selection.
- The Wake-up Timer will activate when the set is switch to standby-mode.

**Special DVD Features****Checking the contents of DVD Video discs: Menus**

DVDs may contain menus to navigate the disc and access special features. To use the menu, press the appropriate numerical key or use the **▼▲▶◀** keys to highlight your selection, then press OK.

**Title/Disc menu**

- Press **DISC MENU**.
- If the current title has a menu, the menu will appear on the screen. Otherwise, the disc menu will be displayed.
- The menu can list camera angles, spoken language and subtitle options, and chapters for the title.
- To remove the title menu, press **DISC MENU** again.

**Camera Angle**

If the disc contains sequences recorded from different camera angles, the angle icon appears, showing the number of available angles and the angle being shown currently. You can then change the camera angle if you wish.

- Use the **▲▼** keys to select the required angle.
- After a while, playback changes to the selected angle. The angle icon remains displayed until multiple angles are no longer available.

**Changing the audio language**

- Select (AUDIO) in the menu bar.
- Press **AUDIO** or **▲▼** repeatedly to see the different languages.

**Subtitles**

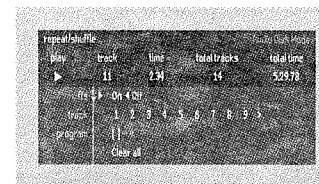
- Select (SUBTITLE) in the menu bar.
- Press **SUBTITLE** or **▲▼** repeatedly to see the different subtitles.

**Special Video CD & SVCD Features****Playback Control (PBC)**

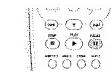
- Load a Video CD with PBC and press **▶**.
- Go through the menu with the keys indicated on the TV screen until your chosen passage starts to play. If a **PBC** menu consists of a list of titles, you can select a title directly.
- Enter your choice with the numerical keys (0-9).
- Press **RETURN** to go back to the previous menu.
- You may also select **PBC OFF** under Personal Preferences.

**Playing an Audio CD**

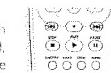
- After loading the disc, playback starts automatically.
- If the TV is on, the Audio CD screen appears.
- The number of tracks and the total playing time of the disc will be shown on the TV screen.
- During playback, the current track number and its elapsed playing time will be shown on the TV screen and on the player display.
- Playback will stop at the end of the disc.
- To stop playback at any other time, press **■**.

**Pause**

- Press **II** during playback.
- To return to playback, press **▶**.

**Search**

- To search forward or backward through the disc at four times the normal speed, hold down **◀◀** or **▶▶** for about one second during playback.
- Search begins, and sound is partially muted.
- To step up to eight times the normal speed, press **◀◀** or **▶▶** again.
- Search goes to eight times the speed, and the sound is muted.
- To return to four times the normal speed, press **◀◀** or **▶▶** again.
- If the TV is on, search speed and direction are indicated on the screen each time **◀◀** or **▶▶** is pressed.
- To end the search, press **▶** to resume playback or press **■** to stop playback.



**English****Album/Title**

This feature allows you to view and select the next or previous MP3 disc Album/Title.

- 1 Press **▲/▼** to scroll through the previous or next Album.
- 2 Press **◀▶** to scroll through the previous or next Track.
- 3 You can also select the desired album/track number directly using the numeric keys on the remote control.

**Note:**

- In **STOP mode**: numbers are used for ALBUM selection.
- In **PLAY mode**: numbers are used for TRACK selection.

**MP3 Disc Features (for specific version only)****Support following MP3-CD formats (ISO9660 format):**

- Max. 30 characters
- Max. nested directory is 8 levels
- The max.ALB number is 32
- Supported VBR bit-rate
- Supported sampling frequencies for MP3 disc are: 32 kHz, 44.1 kHz, 48 kHz
- Supported Bit-rates of MP3 disc are: 32, 64, 96, 128, 192, 256 (kbps)

**Following formats can't be supported**

- The files like \*.WMA, \*.AAC, \*.DLF, \*.M3U, \*.PLS
- Chinese filenames
- The non-session closed discs
- The discs recorded under UDF format

Downloading MP3 files from the Internet or copying songs from your own legal discs is a delicate process.

Sound Quality	Bit Rate	Average Reduction Ratio	Average total MP3-CD time	Comment
VBR	32 kbps	30.3	40 hrs.	Sound quality significantly better than compressed
VBR	64 kbps	20.3	20 hrs.	
VBR	96 kbps	15.1	15 hrs.	Balanced sound quality compression rate
CD-Quality	128 kbps	10.1	10 hrs.	
CD-Quality	192 kbps	5.1	5 hrs.	Compression rate too high to play CD-Quality
CD-Quality	256 kbps	3.1	3 hrs.	

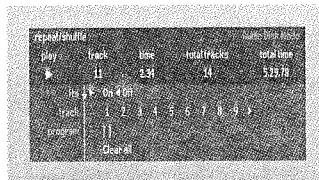
You may experience an occasional "skip" while listening to your MP3 files. This is normal.

**Additional note for MP3 disc Playback:**

- In compliance with the SDMI, digital-out is muted while playing MP3 discs.
- Due to the recording nature of Digital Audio MP3 (DAM), only Digital Audio music will play.
- The disc reading time may exceed 10 seconds due to the large number of songs compiled onto one disc.
- Only the first session of multisession discs is supported.

**Favorite Track Selection (FTS) Program**

- The FTS Program allows you to store your favorite tracks for a particular disc in the player memory.
- Each FTS Program can contain 20 tracks.

**Storing an FTS Program**

- 1 Load a disc and stop playback.
- 2 Use **▼** to go to the list of available tracks.
- 3 Use **▶** or **◀** to select tracks from the list.  
To go directly to any track, enter the track number using the numerical keys (0-9).
- 4 Store each track by pressing **OK**.  
→ The track numbers will be added to the list.  
→ The number of tracks and the playing time of the program will be shown on the TV screen and the player display.

When your FTS Program is complete, press **▶** to start playback or press **▲** to go back to Stop mode. In either case, the FTS Program will be automatically memorized.

**Switching FTS ON/OFF**

- 1 Use **▲/▼** to select FTS.
- 2 Use **▶** or **◀** to select either ON or OFF.

**Erasing a track from an FTS Program**

- 1 Use **▼** to go to the list of selected tracks.
- 2 Use **▶** and **◀** to select the track number you wish to erase.
- 3 Press **OK**.  
→ The track number will be erased from the list of selected tracks.

**Erasing the complete program**

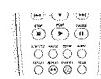
- 1 Use **▼** to select **CLEAR ALL**, then press **OK**.  
→ The complete FTS Program for the disc will be erased.

**Moving to another track**

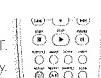
- Press **◀▶** or **▶▶** briefly during playback to go to the next track or to return to the beginning of the current track.
- Press **◀▶** twice briefly to step back to the previous track.
- To go directly to any track, enter the track number using the numerical keys (0-9).

**Shuffle**

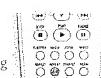
- Press **SHUFFLE** during playback.  
→ The playing order of the tracks is changed.
- To return to normal playback, press **SHUFFLE** again.

**Repeat track/disc**

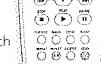
- To repeat the current track, press **REPEAT**.  
→ **Q** appears on the DVD player display.
- To repeat the entire disc, press **REPEAT** a second time.  
→ **Q** appears on the DVD player display.
- To exit Repeat mode, press **REPEAT** a third time.

**Repeat A-B**

- To repeat a specific portion of a track:  
• Press **REPEAT A-B** at your chosen starting point.  
→ **Q** appears on the DVD player display.
- Press **REPEAT A-B** again at your chosen end point.  
→ **Q** appears on the DVD player display, and the sequence begins to play repeatedly.
- To cancel the sequence and continue playback, press **REPEAT A-B**.

**Scan**

- Scanning plays the first 10 seconds of each track on the disc.
- Press **SCAN**.
- To continue playback at your chosen track, press **SCAN** again or press **▶**.



## Access Control

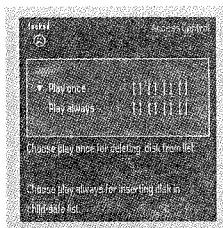
### Access Control: Child Lock (DVD Video and Video CD)

#### Activating/deactivating the Child Lock

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the **▲/▼** keys.
- Enter a 4-digit code of your own choice.
- Enter the code a second time.
- Move to "CHILD LOCK" using the **▲/▼** keys.
- Move to **LOCK/UNLOCK** using the **▶** key.
- Select **LOCK** using the **▲/▼** keys.
- Press OK or **◀** to confirm, then press **◀** again to exit the menu.  
→ Now unauthorized discs will not be played unless the 4-digit code is entered.
- Select **UNLOCK** to deactivate the **CHILD LOCK**.

*Note: Confirmation of the 4-digit code is necessary when:*

- The code is entered for the very first time (see above).
- The code is changed (see 'Changing the 4-digit code').
- The code is cancelled (see 'Changing the 4-digit code').

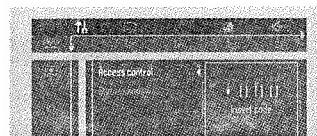


#### Deauthorizing discs

- Insert the disc. See 'Loading discs'.  
→ Playback starts automatically.
- Press **■** while **②** is visible.  
→ The **②** will appear and the disc is now deauthorized.

### Access Control: Parental Control (DVD Video only)

Movies on DVDs may contain scenes not suitable for children. Therefore, discs may contain Parental Control information which applies to the complete disc or to certain scenes on the disc. These scenes are rated from 1 to 8, and alternative, more suitable scenes are available on the disc. Ratings are country dependent. The 'Parental Control' feature allows you to prevent discs from being played by your children or to have certain discs played with alternative scenes.



#### Authorizing discs

- Insert the disc. See 'Loading discs'.  
→ The child protect dialog will appear.  
You will be asked to enter your secret code for 'Playback Once' or 'Playback Always'. If you select 'Playback Once', the disc can be played as long as it is in the player and the player is ON. If you select 'Playback Always', the disc will become child safe (authorized) and can always be played, even if the Child Lock is set to ON.

#### Notes:

- The player memory maintains a list of 120 authorized ('child safe') disc titles. A disc will be placed in the list when 'Playback Always' is selected in the 'child protect' dialog.
- Each time a 'child safe' disc is played, it will be placed on top of the list. When the list is full and a new disc is added, the last disc in the list will be removed from the list.
- Double-sided DVDs may have a different ID for each side. In order to make the disc 'child safe', each side has to be authorized.
- Multi-volume VCDs may have a different ID for each volume. In order to make the complete set 'child safe', each volume has to be authorized.

### Activating/Deactivating Parental Control

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the **▲/▼** keys.
- Enter your 4-digit code. If necessary, enter the code a second time.
- Move to **Parental Control** using the **▲/▼** keys.
- Move to **VALUE ADJUSTMENT (1-8)** using the **▶** key.
- Then use the **▲/▼** keys or the numerical keys on the remote control to select a rating from 1 to 8 for the disc inserted.

*Rating 0 (displayed as '—'): Parental Control is not activated. The Disc will be played in full.*

#### Ratings 1 to 8:

The disc contains scenes not suitable for children. If you set a rating for the player, all scenes with the same rating or lower will be played. Higher rated scenes will not be played unless an alternative is available on the disc. The alternative must have the same rating or a lower one. If no suitable alternative is found, playback will stop and the 4-digit code has to be entered.

- Press OK or **◀** to confirm, then press **◀** again to exit the menu.



#### Country

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the **▲/▼** keys.
- Enter the 4-digit code.
- Move to **CHANGE COUNTRY** using the **▼** key.
- Press the **▶** key.
- Select a country using **▲/▼**.
- Press OK or **◀** to confirm, then press **◀** again to exit the menu.

### Changing the 4-digit code

- When disc playback is stopped, select **ACCESS CONTROL** in the features menu using the **▲/▼** keys.
- Enter the old code.
- Move to **CHANGE CODE** using the **▼** key.
- Press the **▶** key.
- Enter the new 4-digit code.
- Enter the code a second time and reconfirm by pressing **OK**.
- Press **◀** to exit the menu.

#### If you forget your 4 digit code

- Press **■** to exit the 'Child Protect' screen.
- Select **ACCESS CONTROL** in the features menu using the **▲/▼** keys.
- Move to **ENTER CODE** using the **▶** key.
- The 4-digit code can be cancelled by pressing **■** four times in the 'Access Control-Enter Code' dialog.
- You can then enter a new code (twice) as described above (Changing the 4 digit code).

#### Parental Control Disclaimer

This DVD player features the **PARENTAL CONTROL** system which is intended to activate when playing DVD discs furnished with certain software coding. This is according to technical standards adopted by the set maker and disc content industries.

Please note that the **PARENTAL CONTROL** system will not operate a DVD disc which is not furnished with the appropriate software coding. Also note that at the time of release of this DVD player, certain aspects of the technical standards had not been settled between set makers and the disc industries.

On this basis, Philips cannot guarantee the functioning of the **PARENTAL CONTROL** system and denies any liability associated with unintended watching of disc content.

If in doubt, please make sure the disc plays according to your **PARENTAL CONTROL** settings before you allow children access to the player.

## Before Requesting Service

English

If it appears that the DVD Video player is faulty, first consult this checklist. Something may have been overlooked. Under no circumstances should you attempt to repair the system yourself; this will invalidate the warranty.

Look for the specific symptom(s). Then perform only the actions listed to remedy the specific symptom(s).

Symptom	Remedy
No power	<ul style="list-style-type: none"> <li>- Make sure the power cord is properly connected.</li> <li>- Check if there is power at the AC outlet by plugging in another appliance.</li> </ul>
No picture	<ul style="list-style-type: none"> <li>- Check if the TV is switched on.</li> <li>- Check the video connection.</li> <li>- Check if a DVD PAL format disc is inserted.</li> </ul>
Distorted picture	<ul style="list-style-type: none"> <li>- Check the disc for fingerprints and clean the disc with a soft cloth, wiping from the center to the edge in a straight line.</li> <li>- Sometimes a small amount of picture distortion may appear. This is not a malfunction.</li> </ul>
Completely distorted picture or no Colour with player menu	<ul style="list-style-type: none"> <li>- If the picture is distorted completely or if the picture rolls vertically, make sure the NTSC/PAL setting at the DVD player matches the video signal of your television.</li> <li>- If your TV video signal is NTSC, select the NTSC setting at the DVD player.</li> <li>- If your video signal is PAL, select the PAL setting. - See NTSC/PAL SETTINGS.</li> </ul>
Distorted or black/white picture with DVD or Video CD	<ul style="list-style-type: none"> <li>- The disc format does not match your TV's video signal (PAL/NTSC).</li> <li>- If your video signal is PAL, see NTSC/PAL Conversion.</li> </ul>
No sound	<ul style="list-style-type: none"> <li>- Check audio connections.</li> <li>- If you are using a HiFi amplifier, try another sound source.</li> </ul>
Distorted sound from HiFi amplifier	<ul style="list-style-type: none"> <li>- Check to make sure that no audio connections are made to the amplifier's phono input.</li> </ul>
No audio at digital output	<ul style="list-style-type: none"> <li>- Check the digital connections.</li> <li>- Check the settings menu to make sure the digital output is set to ALL or PCM.</li> <li>- Check if the audio format of the selected audio language matches your receiver capabilities.</li> <li>- Not applicable for MP3</li> </ul>
Disc can't be played	<ul style="list-style-type: none"> <li>- Ensure the disc label is facing up.</li> <li>- Clean the disc.</li> <li>- Check if the disc is defective by trying another disc.</li> <li>- Check to see if the disc is defective, badly scratched or warped (not flat).</li> </ul>
No return to start-up screen when disc is removed	<ul style="list-style-type: none"> <li>- Reset the unit by switching the player off, then on again.</li> <li>- Check to see if the program requires another disc to be loaded.</li> </ul>
The player does not respond to the remote control	<ul style="list-style-type: none"> <li>- Aim the remote control directly at the sensor on the front of the player.</li> <li>- Remove any obstacles between the player and the remote control.</li> <li>- Inspect or replace the batteries in the remote control.</li> </ul>
Buttons do not work	<ul style="list-style-type: none"> <li>- In order to completely reset the player unplug the AC cord from the AC outlet. (Please ensure that the set is not in Initial Setup mode.)</li> </ul>
Player does not respond to some operating commands during playback	<ul style="list-style-type: none"> <li>- Operations may not be permitted by the disc. Refer to the instructions of the disc.</li> </ul>

DVD VIDEO PLAYER CANNOT READ

CDs/DVDs

Use a commercially available cleaning CD/DVD to clean the lens before sending the DVD Video player for repair.

## Appendix

English

### Speaker Settings

#### 6 Channel settings

##### Front speaker

- L (Large): When the front speakers can reproduce low frequency signals below 120Hz  
 S (Small): When the front speakers cannot produce low frequency signals below 120Hz

##### Center Speaker

- L (Large): When the center speaker can reproduce low frequency signals below 120Hz  
 S (Small): When the center speaker cannot produce low frequency signals below 120Hz  
 Off: When the center speaker is not connected

##### Surround speakers

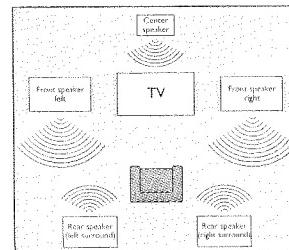
- L (Large): When the surround speakers can reproduce low frequency signals below 120Hz  
 S (Small): When the surround speakers cannot produce low frequency signals below 120Hz  
 Off: When the surround speakers are not connected

##### Subwoofer

- On: When you connect a subwoofer  
 Off: When a subwoofer is not connected

##### Note:

Certain speaker settings are prohibited by the Dolby Digital licensing agreement.

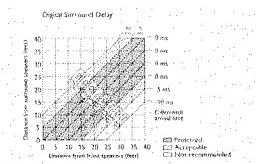


### Delay times

The DVD player is set to reproduce correctly synchronized Digital Surround Sound in a listening area where the surround speakers are about 150cm nearer to the listening position than the front speakers, and the center speaker is in line with the front speakers. To adjust for other listening area arrangements, adapt delay time according to the following instructions:

#### Digital Surround

Measure the distances in centimeters from the front speaker and the surround speaker to the listening position.  
 Subtract the surround distance from the front distance and divide by 30. The result is the required Surround Channel delay time in milliseconds.  
 If the center speaker is in line with the front speaker, no center speaker delay is needed. If, however, it is nearer the listening position, measure the distance in centimeters between the front and center speaker planes, and divide by 30. The result is the required Center Channel delay time in milliseconds.

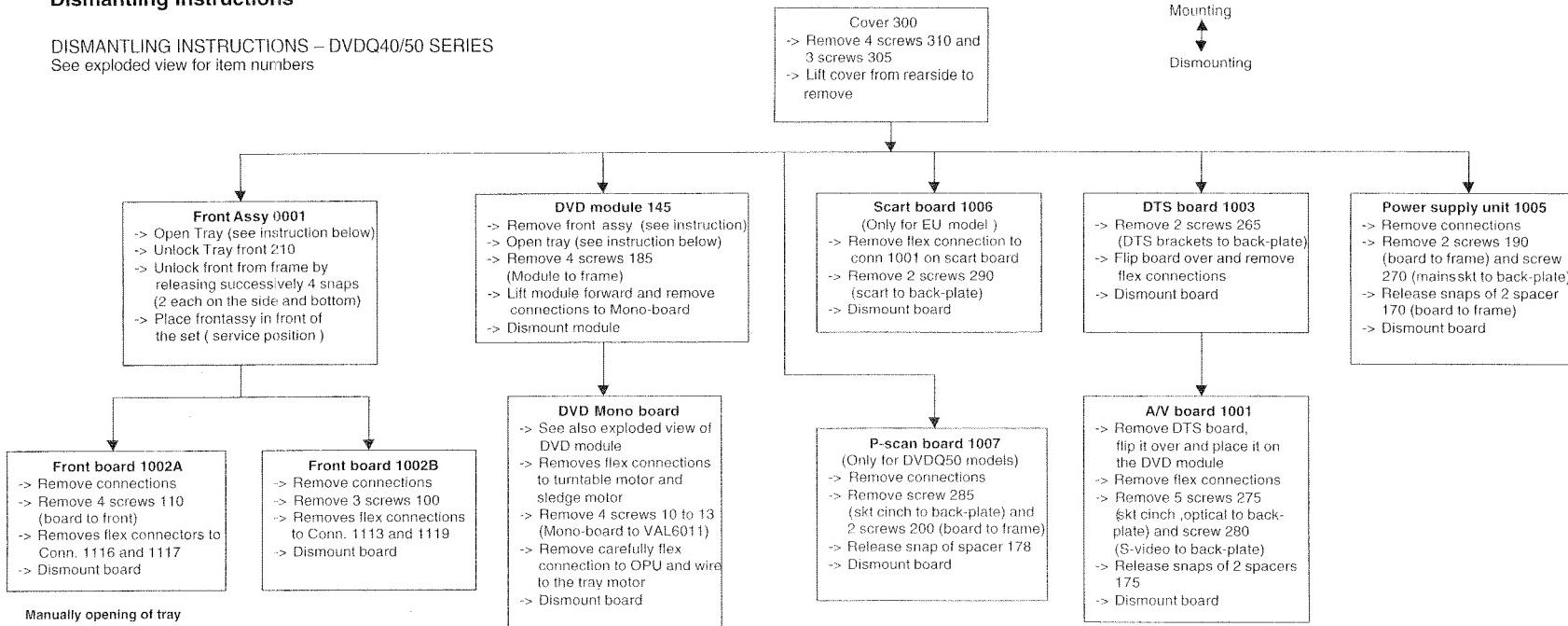


## 4. Mechanical Instructions

### 4.1 Dismantling Instructions

#### Dismantling Instructions

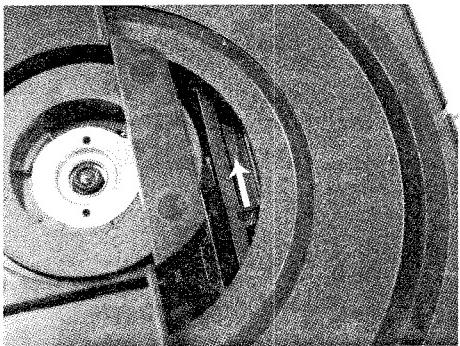
DISMANTLING INSTRUCTIONS – DVDQ40/50 SERIES  
See exploded view for item numbers



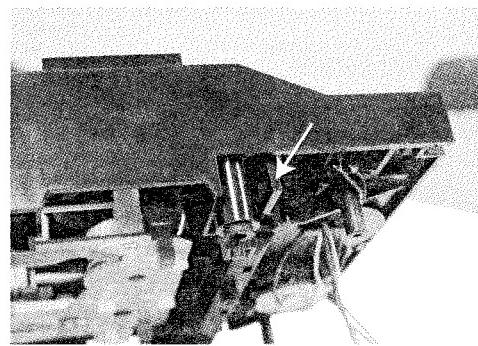
#### Manually opening of tray

When it is not possible to open the tray with the EJECT button, the tray can manually be opened.

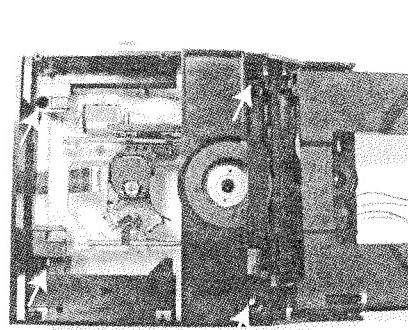
When no disc is loaded, unlock the tray by moving the slide from left to right and pull tray outwards.



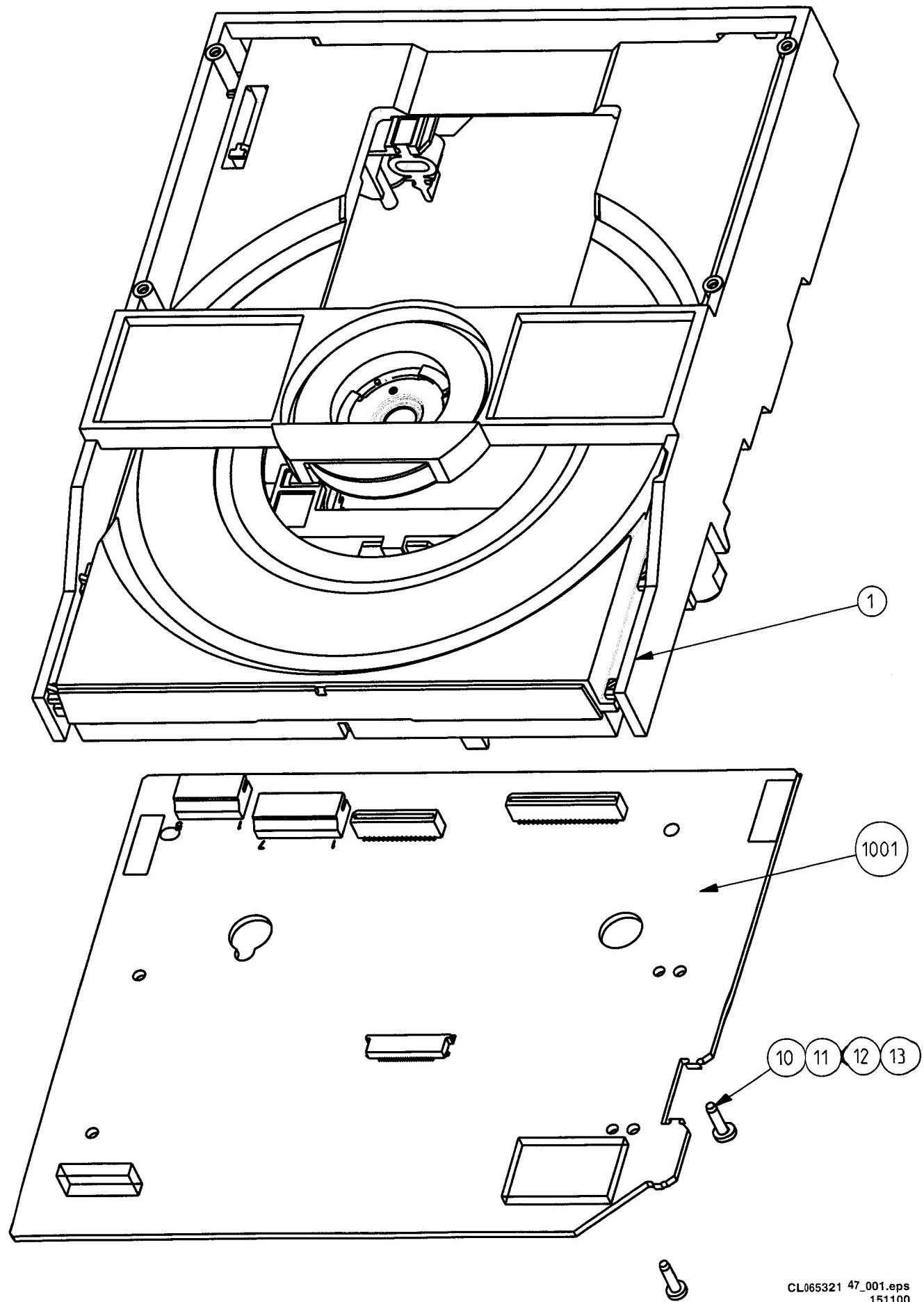
When a disc is loaded, unlock the tray by pushing the slide inwards with a screwdriver and pull tray outwards.

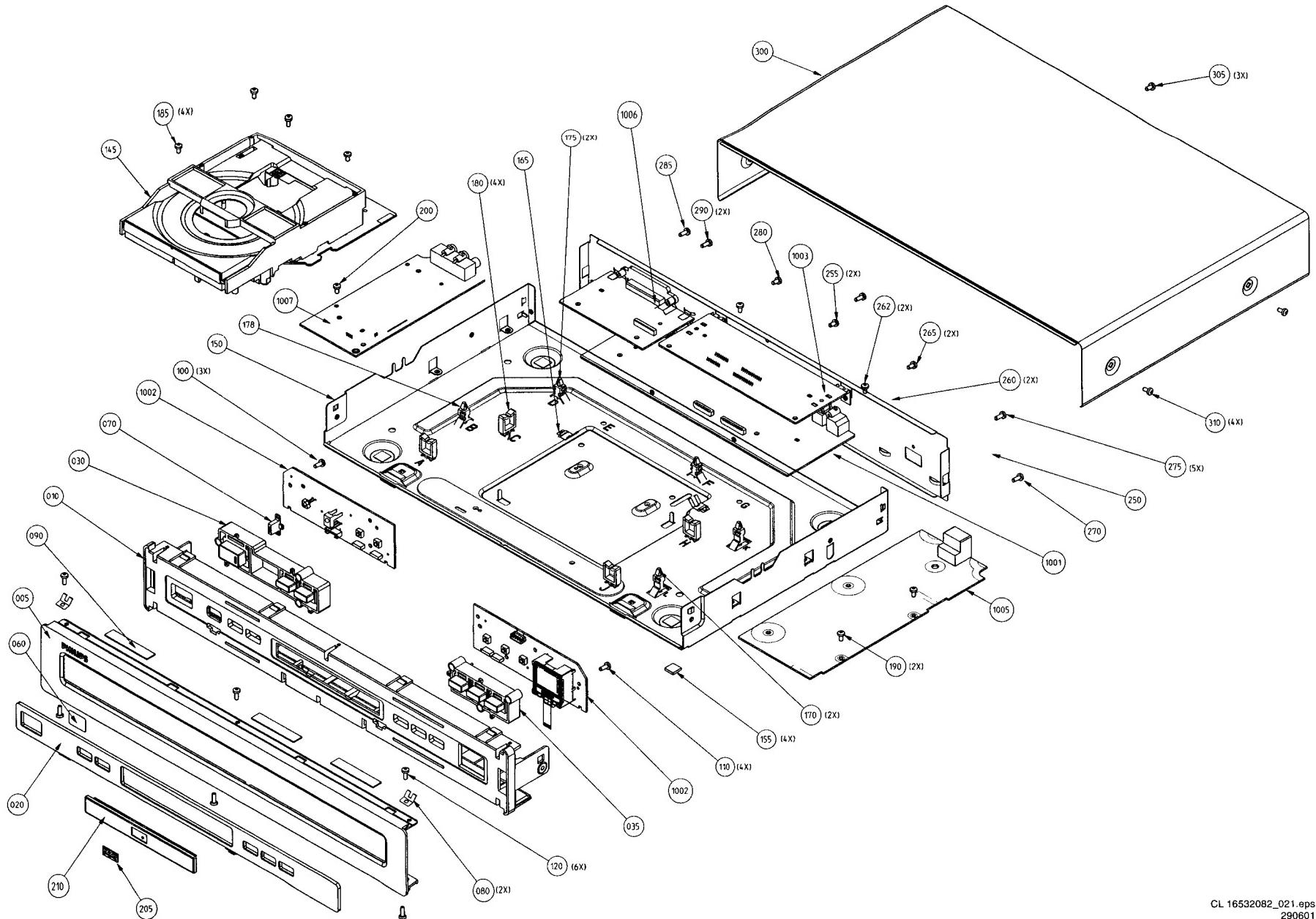


Remove 4 screws to remove loader.

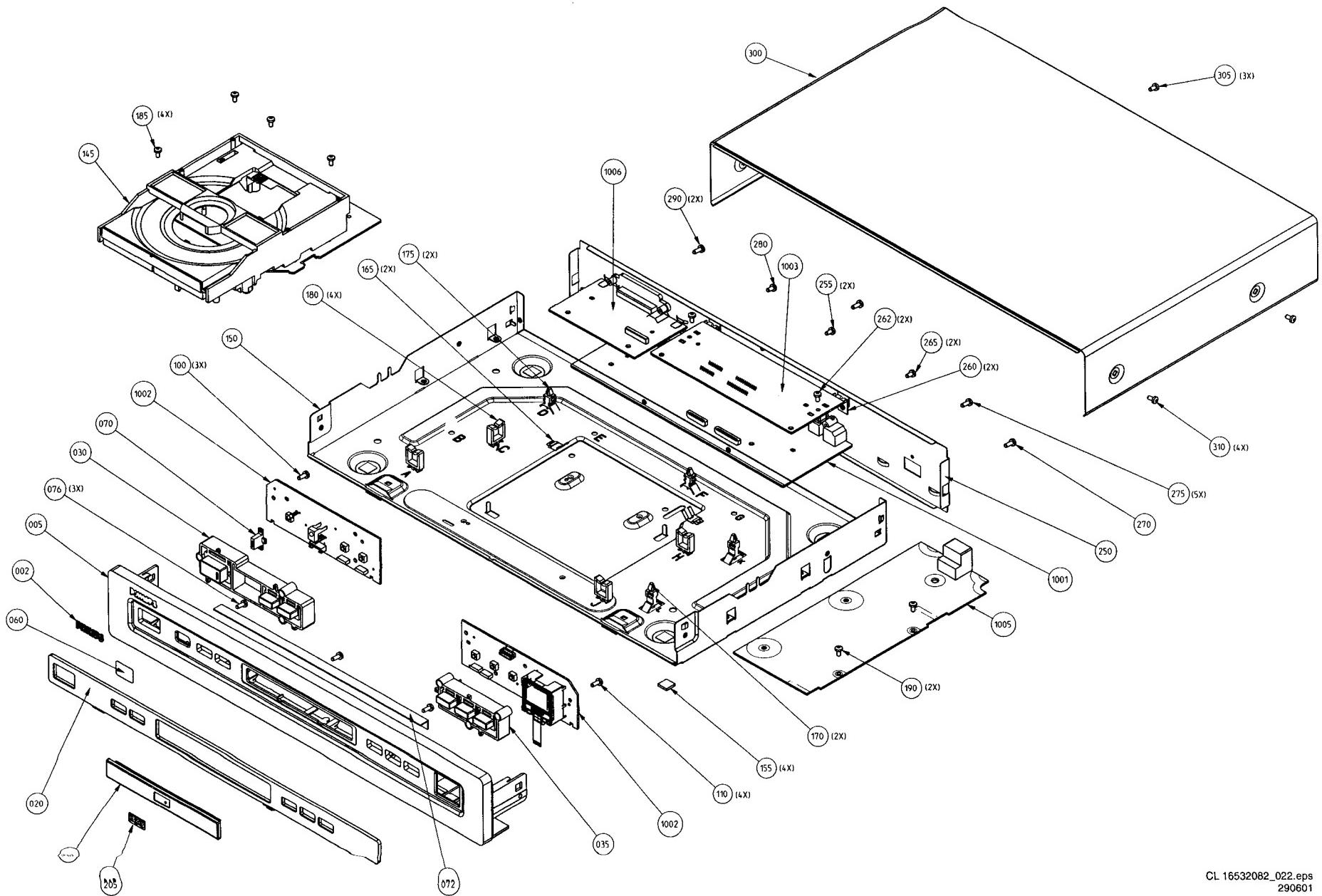


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020701





CL 16532082\_021.eps  
290601



#### 4.3 Service Position

See figure 4-1 for the service position

1. Remove the cables from the cable tie housing.
2. Remove 4 screws that mount the DVD module to the bottom frame.
3. Move the DVD module backward slightly and flip the module over, so that the component side of the board faces upwards, and the module is in the service position.

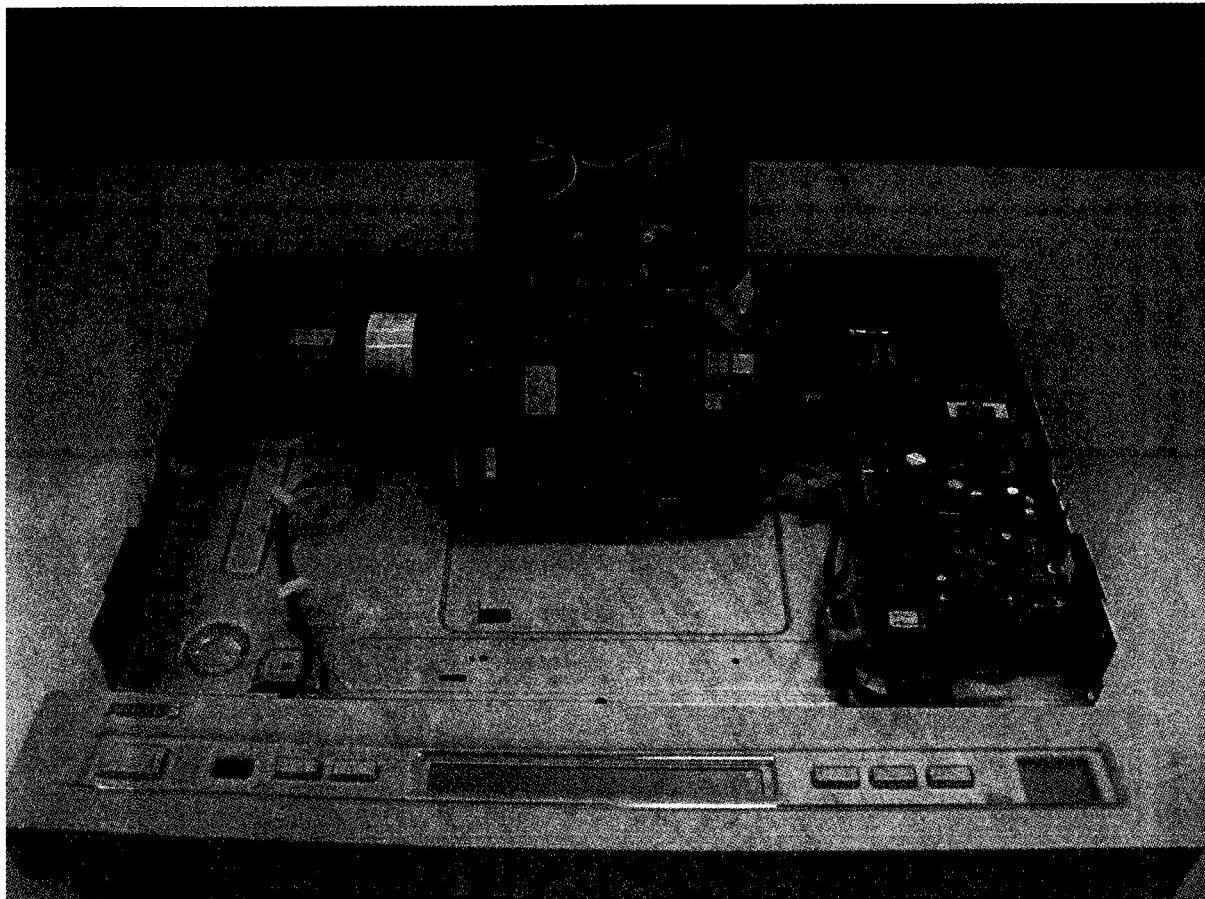


Figure 4-1

## 5. Diagnostic Software Descriptions And Troubleshooting

### 5.1 Dealerscript

#### 5.1.1 Purpose of Dealer Script

The dealer script can give a diagnosis on a standalone DVD player; no other equipment is needed to perform a number of hardware tests to check if the DVD player is faulty. The diagnosis is simply a "error" or "pass" message; no indication is given of faulty hardware modules. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

#### 5.1.2 Contents of Dealer Script

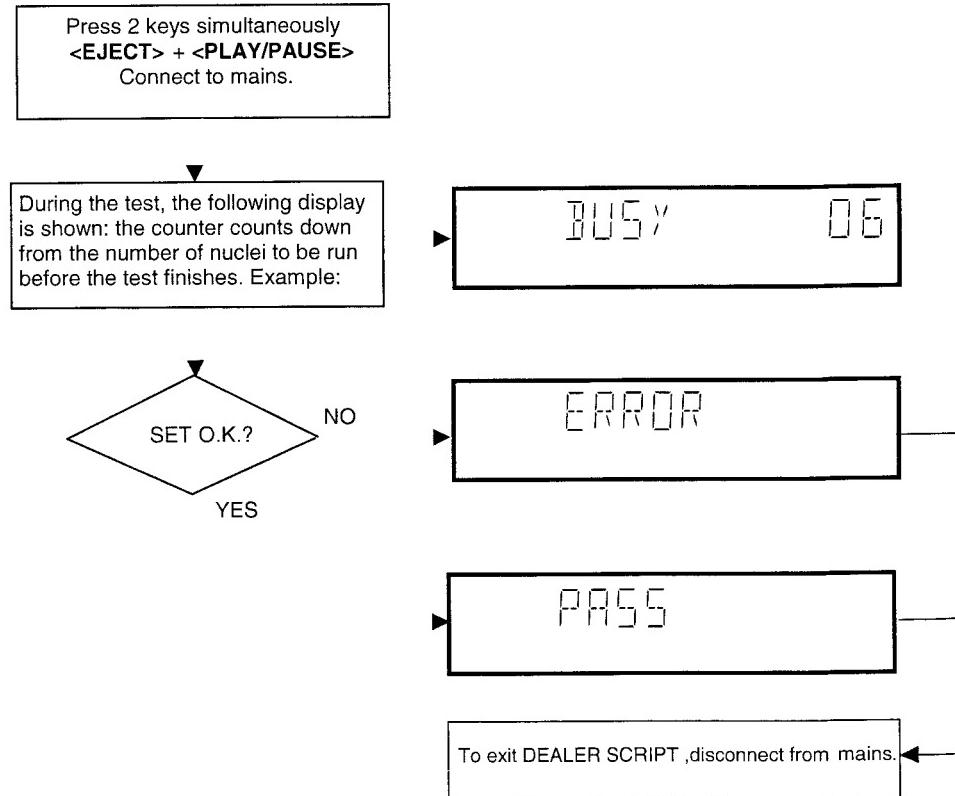
The dealer script executes all diagnostic nuclei that do not need any user interaction and are meaningful on a standalone DVD player.

The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

Nucleus	Description
PapChksFl	6 Calculate and verify checksum of FLASH memory.
Papl2cDisp	5 Checks the I2C interface with the slave processor on the display PCB.
PapS2bEcho	4 Checks the I2C interface to the basic engine.
Papl2cNvram	3 Checks the I2C interface with the NVRAM.
PapNvramWrR	2 Pattern test of all locations in the NVRAM
CompSdramWrR	1 Pattern test of all locations in the SDRAM(s).

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290600

Figure 5-1



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Figure 5-2

## 5.2 Player Script

### 5.2.1 Purpose Of Player Script

The Player script will give the opportunity to perform a test that will determine which of the DVD player's modules are faulty, to read the error log and error bits and to perform an endurance loop test. To successfully perform the tests, the DVD player must be connected to a tv set to check the output of a number of nuclei. For DVD2b a multi-channel amplifier, a set of 6 boxes and an external video source are necessary to test. To be able to check results of certain nuclei, the player script expects some interaction of the user (i.e. to approve a test picture or a test sound). Some nuclei (e.g. nuclei that test functionality of the Basic Engine module) require that the DVD player itself is opened, to enable the user to observe moving parts and approve their movement visually. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

### 5.2.2 Contents Of Player Script

The player script contains all nuclei that are useful on a DVD player that is connected to a tv-set and help to determine which module of the DVD player is faulty, as well as to read out the contents of the error logs.

### 5.2.3 Structure Of Player Script

The player script consists of a set of nuclei testing the three hardware modules in the DVD player: the Display PWB, the Digital PWB and the Basic Engine.

Nuclei run by the player test need some user interaction; in the next paragraph this interaction is described. The player test is done in two phases:

1. Interactive tests: this part of the player test depends strongly on user interaction and input to determine nucleus results and to progress through the full test. Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player.
2. The loop test will loop through the list of nuclei indefinitely, till the player is reset. The list of nuclei is as follows:
  - VideoScartSwComm
  - PapChksFlash
  - Pap12cNvram
  - CompSdramWrR
  - PapS2bEcho
  - Pap12cDisp

For DSW version 1.6 and above, the DSW version number will be displayed on the local display. Press PLAY/PAUSE to continue to the display test.

The display should look like the following:



Figure 5-3

### 5.2.4 Survey

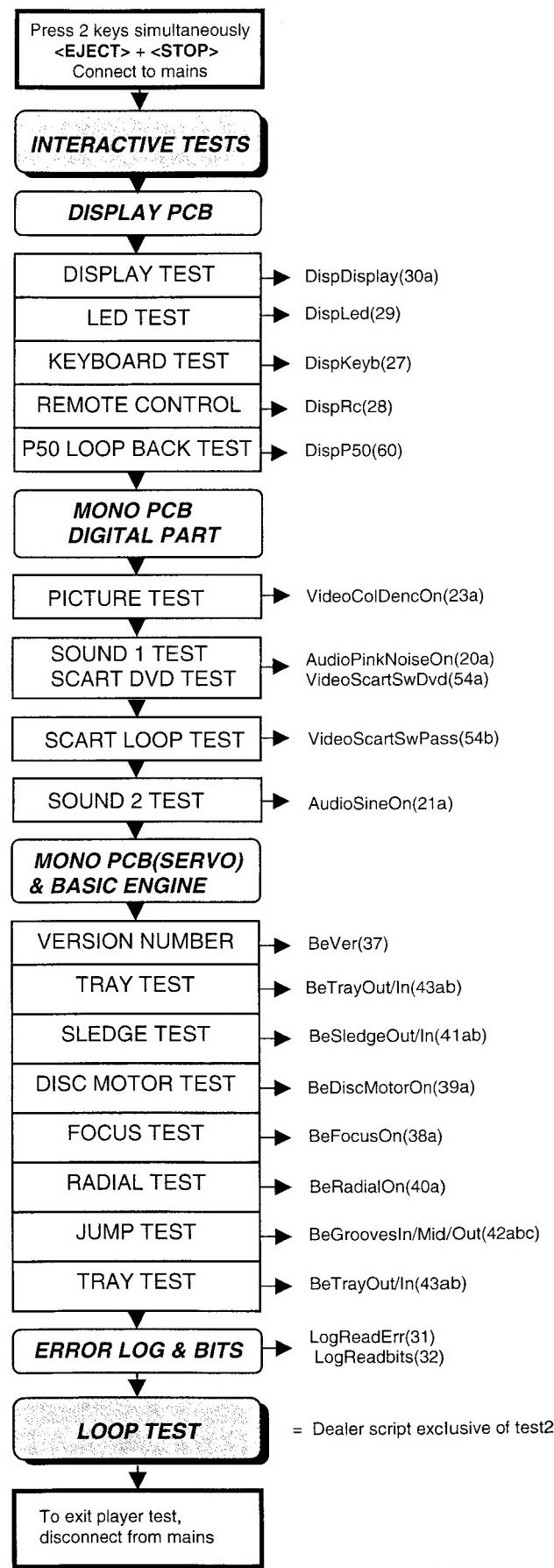


Figure 5-4

### 5.3 Display PCB

#### 5.3.1 Display Test

The display test is performed by nucleus DispLCDDisplay. By putting a series of test patterns on the local display, the local display is tested. To step through all different patterns, the user must either press EJECT (pattern is ok) or STOP (pattern was incorrect) to proceed to the next pattern. The display of patterns is continued in a cyclic manner, shown in Fig. 5-5, until the user presses PLAY/PAUSE. If the user presses PLAY/PAUSE before all display patterns are tested, the DispLCDDisplay nucleus will return FALSE (display test unsuccessful).

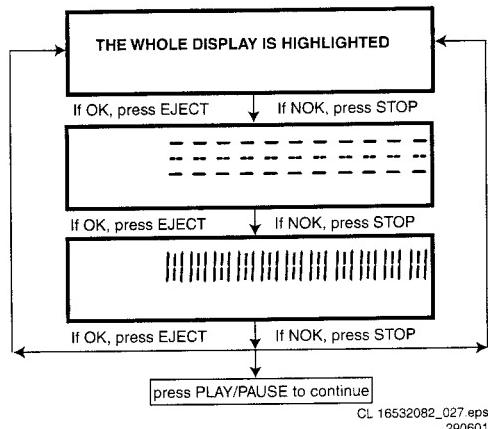


Figure 5-5

#### LCD Displays Backlight Test

The setting of the backlight brightness of the LCD display can be performed by the nucleus DispLCDBklight. To step through the 3 different brightness levels, the user either press EJECT (display is OK) or STOP (display is incorrect) to proceed to the next display. The display of the brightness levels is continued in a cyclic manner until the user presses PLAY/PAUSE. The brightness pattern is accompanied by a text on the LCD display to indicate its' current brightness level.

If the user presses PLAY/PAUSE before all display patterns are tested, the DispLCDBklight nucleus will return FALSE (display test unsuccessful)

#### 5.3.2 LED Test

The LED(s) on the DVD player is (are) tested by nucleus DispLed. The user must check if the LED(s) is (are) lighted; if it is, press EJECT, if it is not, press STOP. By pressing PLAY/PAUSE the script will proceed to the next test. If the user presses PLAY/PAUSE before EJECT or STOP, the DispLed nucleus will return TRUE (LED test successful).

#### 5.3.3 Keyboard Test

The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed. Example of the local display during this test:

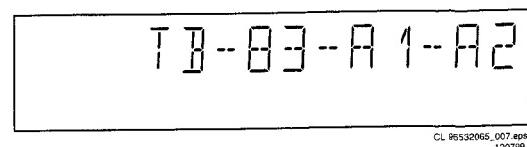


Figure 5-6

The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "tb-" will remain on display.

key id.	key
0	PLAY
1	NEXT
2	PREVIOUS
4	STOP
5	EJECT
J	STANDBY

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020701

Figure 5-7

If any keys are detected more than once (due to hardware error), the key-code is displayed twice (or more), with the second digit increased by 1.

If the user does not press all keys minimally once (in any order), the DispKeys nucleus will return FALSE and cause an error in the overall result of the player script.

The user can leave the keyboard test by pressing the PLAY/PAUSE key on the local display of the DVD player for at least one full second.

The result of the keyboard test is shown on local display as follows:

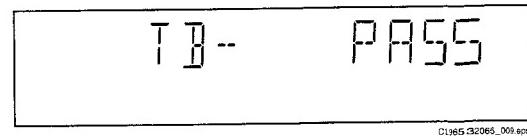


Figure 5-8

Or

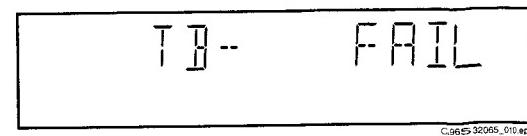


Figure 5-9

Pressing PLAY/PAUSE on the local keyboard again will proceed to the next text.

## 5.3.4 Remote Control Test

The remote control of the DVD player is tested by nucleus DispRc. The user must press any key on the remote control just once. The codes of the key pressed will be shown on the local display in hexadecimal format. Example:

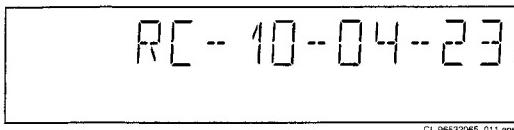


Figure 5-10

In this example 23 is the hexadecimal code of the pressed RC key. The user can leave the remote-control test by pressing PLAY/PAUSE on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the PLAY/PAUSE key; pressing the PLAY/PAUSE key before pressing a key on the remote control gives an error in the remote control test (note that the remote control test will also fail if a key on the remote control was pressed but no code was received). The remote control test does not check upon the contents of the received code, that is it will not be checked if the received code matches the key pressed. If desired, the user can manually check this code by using a code-table for the remote control key-codes.

C Key id	Hexadecimal code
STANDBY	0C
STOP	31
PLAY	2C
PLAY BACKWARD	2D
PAUSE	30
STEP FORWARD	F6
STEP BACKWARD	F5
FORWARD	28
FORWARD 4X	DF
FORWARD 8X	E0
BACKWARD	29
BACKWARD 4X	DE
BACKWARD 8X	DD
SLOW	22
SLOW 2	D9
SLOW BACKWARD	23
SLOW BACKWARD 2	DA
NEXT	20
PREVIOUS	21
CURSOR UP	58
CURSOR DOWN	59
CURSOR LEFT	5A
CURSOR RIGHT	5B
OK	5C
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
TOGGLE	C8
ANGLE	B5
AUDIO	4E
SUBTITLES	4B
SUBTITLE ON/OFF	E3
ROOT MENU	54
TITLE MENU	71
MENU	D1
SETUP MENU	82
OSD ON/OFF	F
RETURN	83
RESUME	D7
SCAN	2A
SHUFFLE	1C
REPEAT	1D
A/B REPEAT	3B
TOGGLE SCART	43
OPEN/CLOSE	42
FTS	FB
KARAOKE	E4
OPTION	FA

Figure 5-11

After pressing PLAY/PAUSE, the result of the remote control test is displayed on the local display of the DVD player as follows:

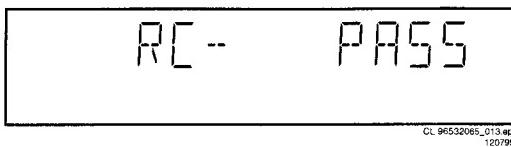


Figure 5-12

Or

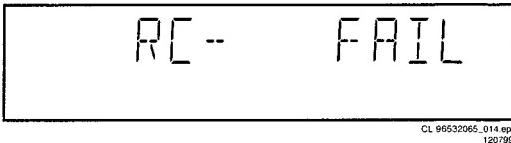


Figure 5-13

Pressing PLAY/PAUSE on the local keyboard again will proceed to the next test.

## 5.3.5 P50 Loop-Back Test

For the P50 loop-back test, the user must first press a key to decide if the test is to be performed. The display will show the following message:

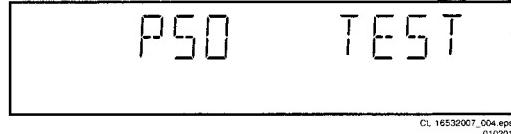


Figure 5-14

If the user presses STOP, the P50 test will be skipped. If the user presses EJECT, the P50 test is performed and the result is displayed as follows:

Test successfull:

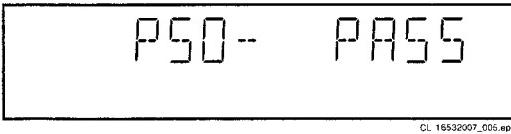


Figure 5-15

Test fails:



Figure 5-16

Press the PLAY/PAUSE key to continue to the next text

## 5.4 Mono PCB Digital Part

### 5.4.1 Picture Test

The picture test is performed by putting a predefined picture (colour bar) on the display (nucleus VideoColDencOn) and asking the user for confirmation. The display will show the following message:

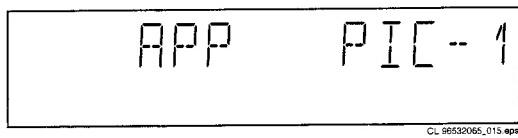


Figure 5-17

By pressing EJECT the user confirms the test, pressing STOP will indicate the picture was invisible or incorrect. Pressing PLAY/PAUSE will proceed to the next test

### 5.4.2 Sound 1 & SCART DVD Test

The first soundtest is performed by starting a pink noise sound that needs confirmation from the user (nucleus AudioPinkNoiseOn); the display will show the following message very shortly:

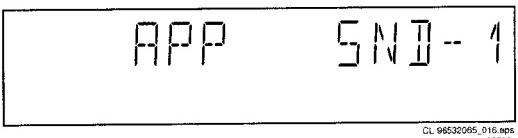


Figure 5-18

After starting up sound 1, SCART loop-trough will be simultaneously active during this test. SCART loop-trough will be measured with the aid of an external video source. When entering the SCART loop-trough, the local display indicates:



Figure 5-19

On the TV screen a colour bar (generated by nucleus VideoColDencOn) is visual and the internally generated pinknoise is audible. By pressing EJECT the user confirms the test, pressing STOP will indicate the sound was inaudible or incorrect. Pressing PLAY/PAUSE will proceed to the next test; if the user presses PLAY/PAUSE without pressing EJECT or STOP first, the result of this test will be TRUE (sound ok). By pressing the PLAY/PAUSE button there will be switched over to the external source, this must become now visible on the TV screen (using the SCART). The local display indicates:

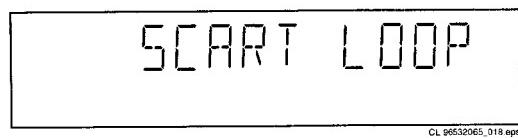


Figure 5-20

The internally generated colour bar is still available on the CVBS and Y/C outputs. And the pinknoise-signal is still available on the cinch audio outputs. By pressing the EJECT button, the internal generated colour bar becomes visual again.

The test can be exited by pressing the PLAY/PAUSE key for more than one second.

### 5.4.3 Sound 2 Test

The second sound test is performed by producing a sine audio output (nucleus AudioSineOn). The signal can be stopped by pressing the STOP-key. The display will show the following message:

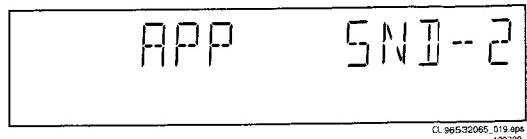


Figure 5-21

By pressing EJECT the user confirms the test, pressing STOP will indicate that something went wrong. Pressing PLAY/PAUSE will proceed to the next; if the user presses PLAY/PAUSE without pressing EJECT or STOP first, the result of this test will be TRUE (sound ok).

## 5.5 Basic Engine

### 5.5.1 Version Number

In the basic engine tests, the version number of the Basic Engine will be shown first, as the following example:

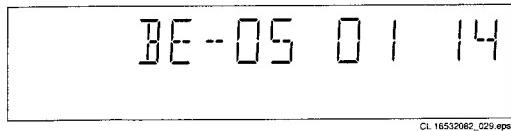


Figure 5-22

By pressing the PLAY/PAUSE key, the Basic Engine tests are started.

### 5.5.2 Tray Test

First, the tray is tested. The purpose of this test is also to give the user the opportunity to put a disc in the tray of the DVD player. Some tests on the Basic Engine require that a disc(e.g. DVD MPTD test disc) is present in the player. At the end of the Basic Engine tests this tray test will be repeated solely to enable the user to remove the disc in the tray. The local display will look as follows:

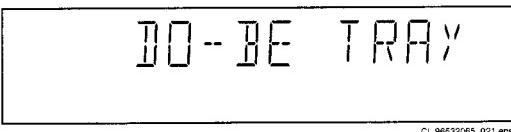


Figure 5-23

By pressing EJECT or STOP the user can toggle the position of the tray. Note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY/PAUSE will proceed to the next test, after the tray has been closed (by the software) if it was open.

### 5.5.3 Sledge Test (Visual Test)

The second Basic Engine test tests the sledge; the user can move the sledge as many times as desired by using EJECT (nucleus BeSledgeOut) and STOP (nucleus BeSledgeIn). Pressing PLAY/PAUSE on the local keyboard proceeds to the next test. Note that this test will not contribute to the test result of the Basic Engine. The local display will look as follows during the sledge test:

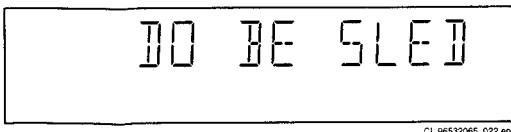


Figure 5-24

### 5.5.4 Disc Motor Test (Visual Test)

The third Basic Engine test tests the disc motor (nucleus BeDiscMotorOn); the local display looks as follows:



Figure 5-25

By pressing EJECT the user confirms that the disc motor is running; pressing STOP indicates the disc motor does not work. Pressing PLAY/PAUSE proceeds to the next test, after a reset of the disc motor (nucleus BeDiscMotorOff). If the user presses PLAY/PAUSE before pressing EJECT or STOP, the result of this test will be TRUE (disc motor is running).

### 5.5.5 Focus Test (Visual Test)

The fourth Basic Engine test tests the focussing; first focussing is turned on by calling nucleus BeFocusOn. The display will look as follows:

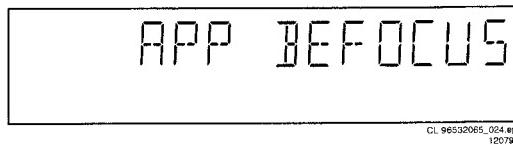


Figure 5-26

By pressing EJECT the user confirms that the focussing was successful; pressing STOP indicates a focussing failure. Pressing PLAY/PAUSE proceeds to the next test after a reset of the focussing (nucleus BeFocusOff); if PLAY/PAUSE is pressed before EJECT or STOP, the result of this test will be TRUE (focus successful).

### 5.5.6 Radial Test (Visual & Listening Test)

The fifth Basic Engine test tests the radial functionality (nucleus BeRadialOn); the local display looks as follows:

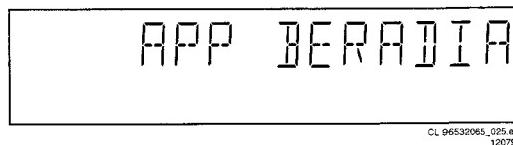


Figure 5-27

By pressing EJECT the user confirms that the radial function worked; pressing STOP indicates the function does not work. Pressing PLAY/PAUSE proceeds to the next test, after a reset of the radial (nucleus BeRadialOff). If the user presses PLAY/PAUSE before pressing EJECT or STOP, the result of this test will be TRUE (radial successful).

### 5.5.7 Jump Test (Listening Test)

The sixth and last Basic Engine test tests the jumping by calling nuclei BeGroovesIn, BeGroovesMid and BeGroovesOut. During this test, the local display looks as follows:

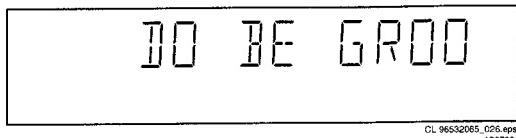


Figure 5-28

The user can switch between the three different types of groove settings by pressing EJECT (forward to next nucleus in the list In-Mid-Out) or STOP (backward in the list In-Mid-Out). This is done in a cyclic manner; note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY/PAUSE proceeds to the next test, after the disc motor has been shut off with a call to nucleus BeDiscMotorOff.

#### 5.5.8 Tray Test

As a last action for the Basic Engine tests, the tray test is repeated. The local display will look as follows:

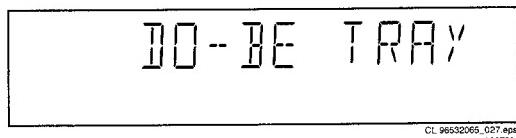


Figure 5-29

This test is meant to give the user the opportunity to remove the disc in the tray. The tray position can be toggled using the EJECT and STOP key. The tray will be closed (by the software, if it is open) before proceeding to the next test when the user presses the PLAY/PAUSE key.

#### 5.5.9 Error Log (See Table On the Next Page)

Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player. Reading the error log is done by nucleus LogReadErr. The display during the errorlog readout looks as follows :

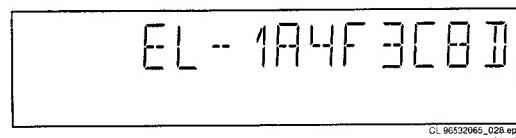


Figure 5-30

By pressing EJECT or STOP the user can move forward or backward (respectively) through the logged error codes. The highlighted number indicates which errorcode is currently on display (in the example above, errorcode number 4 is displayed). If "0000" is displayed at all positions, the error log is empty. Display of the logged errors is done in a cyclic manner. The errorcode with the lowest highlighted number is the most recent. By pressing PLAY/PAUSE on the local keyboard, the user can proceed to the next test.

#### 5.5.10 Error Bits (See Table On the next page)

Reading the error bits is done by nucleus LogReadBits. The display during the errorbits readout looks as follows:

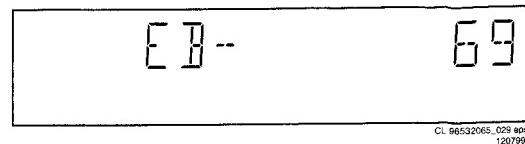


Figure 5-31

Only the set errorbits will be shown by their (decimal) number. Refer to the appropriate documentation for the explanation of each bit number. If the display only shows "EB-0", no error bits were set. By pressing PLAY/PAUSE the user can continue to the next test.

#### 5.6 Loop Test (See Table Below)

At the start of the loop test, the display will show the result of the interactive player test:

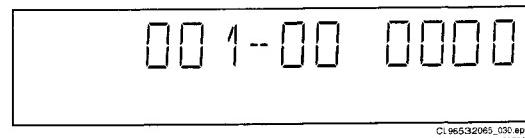


Figure 5-32

The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values are to be interpreted as follows:

Displayed Value	Indication for each module		
	Basic Engine	Mono PCB	Display PCB
000	ok	ok	ok
001	ok	ok	faulty
010	ok	faulty	ok
011	ok	faulty	faulty
100	faulty	ok	ok
101	faulty	ok	faulty
110	faulty	faulty	ok
111	faulty	faulty	faulty

CL 96532065\_031.eps  
120799

Figure 5-33

The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely. The display of the DVD player will display not only the three digits indicating correct/faulty modules and the last found error code (as mentioned, faults are detected as far as they can be within the scope of the diagnostic software), but also a loop counter indicating how many times the loop has been gone through. Example:

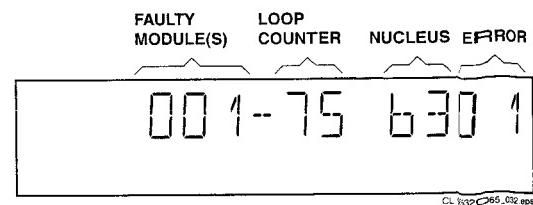


Figure 5-34

The number after the hyphen indicates the number of times the loop test has been performed; the 4 digits at the right side of the display show the last error that was found when running the loop test: the leftmost two digits of this code

indicate which nucleus resulted in a fault; the rightmost two digits refer to the faultcode within that nucleus. For further explanation of this error code, see list of error codes below.

#### ERROR CODES LOOP TEST

ERROR CODE	NUCLEUS NUMBER	ERROR DESCRIPTION
0601	6	Calculated checksum of FLASH is not correct
1101	11	I2C bus busy before start
1102		NVRAM access time-out
1103		No NVRAM Acknowledge
1104		NVRAM reply time-out
1201	12	I2C bus busy
1202		I2C bus not working
1203		Slave controller not responding
1204		Slave response is not correct
1301	13	Parity error from basic engine to serial
1302		Parity error from serial to basic engine
1303		No communication between serial and basic engine
1304		Communication time-out error
1601	16	The SDRAM is faulty
5201	52	I2C bus busy
5202		Error sending I2C command to COLOR SETUP IC
5203		Colour setup IC not responding
5204		Colour setup IC response is not correct
5401	54	I2C bus busy
5402		Error sending I2C command to SCART SWITCH IC
5403		SCART Switch is not responding
5403		SCART Switch response is not correct

CL06532096\_006.eps  
050700

Figure 5-35

Error log / bits table	Read ERROR LOG in player script	Read ERROR BITS in player script
Basic engine errors	Value:	Value:
Command to the Basic Engine not allowed in this state or unknown command	150101	8
Parameter(s) from the command to the Basic Engine is not valid	150102	7
Sledge could not be moved to the inner home position	150103	6
Focus failure	150104	5
Turntable motor speed could not be reached within timeout	150105	4
Radial servo could not get on track on the disc	150106	3
PLL could not lock in the accessing or tracking state	150107	2
Subcode or sector information could not be read	150108	1
requested subcode could not be found	150109	16
Tray could not be closed or opened completely	15010A	15
TOC could not be read within timeout	15010B	14
The requested seek on the disc could not be executed	15010C	13
A requested lead-in is not on the disc	15010D	12
A non existing burst cutting area is requested	15010E	11
S2b communication error	1501F0	10
S2b communication error	1501F1	9
S2b communication error	1501F3	24
S2b communication error	1501F4	23
S2b communication error	1501F5	22
Digital PWB errors		
Communication error with the Sti 5505	90000	32
Communication error with the Sti 5505	90001	31
Display processor errors		
Communication error with the display processor	190000	40

### 5.6.1 Servicing DVD Loader

The DVD Loader / mechanism, VAL6011, has to be exchanged completely in case of failure. A new mechanism can be ordered with codenumber 9305 023 61101.

### 5.6.2 Reprogramming Of New Mono Boards.

#### **Caution**

***This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono board.***

After reset of NV-memory or repair of the mono board, all the customer settings and also the region code will be lost.

Reprogramming of the mono board will put the player back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.

Reprogramming is limited to 25 times

When the counter reaches 25, reprogramming is not possible anymore

Reprogramming will be done by way of the remote control.

Put the player in stop mode, no disc loaded.

Press the following keys on the remote control:

<PLAY> followed by numerical keys <1> <5> <9>

The display shows: "-----"

Press now successively the following keys :

for DVDQ40 /001 /021 /051 : <0><6><1> <0><0><0><0><0><0><0><0><0>

for DVDQ50 /001 /021 /051 : <0><6><8> <0><0><0><0><0><0><0><0>

Press <PLAY> again.

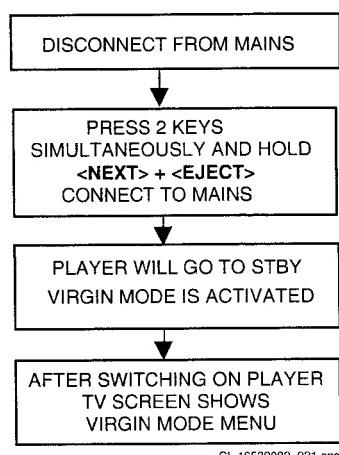
The TV screen will become BLUE during a short time to confirm that the mono board has been reprogrammed.

CL 16532082\_030.eps  
290601

Figure 5-36

### 5.6.3 Reset Of Virgin Mode

After the player has been powered up for test by the dealer, it would have gone through the Virgin Mode. It is possible to reset the settings made during that mode before the delivery of player to the customer. This can be done as shown in the following diagram:



#### **TRADE MODE**

***When the player is in Trade Mode, the player cannot be controlled by means of the front key buttons, but only by means of the remote control.***

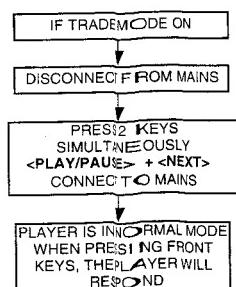
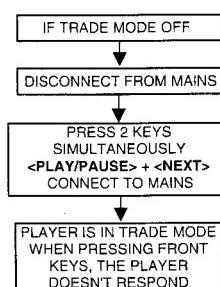


Figure 5-38

Figure 5-37

## 5.7 Test Instruction Audio/Video Board

These test instructions can be used for all versions of the A/V board which has the following outputs:

- Audio L/R
- 5.1 Audio output
- Subwoofer output
- Optical / Coaxial digital output
- CVBS
- Y/G\_vid,U/B\_vid,V/R\_vid output
- S-video
- Scart output

### 5.7.1 General

- All the waveforms measurement carried out in these test instruction will be base on the testpoint indicated in the A/V board schematic diagram in the Service manual.
- Impedance of the measuring-equipment should be >  $1\Omega$
- Most of the tests can be done using either the Diagnostic software " Player script" which can be found in the chapter "Diagnostic Software description and troubleshooting" or the Menu interface using the Service PC with a terminal emulation program ( e.g. Window Hyperterminal ) where it is possible to control the execution of the Diagnostic Nuclei
- Setup for the measurement will be done in set level with all modules connected as shown in the Wiring Block diagram.

### 5.7.2 General Start-Up Measurement

#### Supply check:

Before starting the measurement, ensure that all power supply are connected to the A/V board.

Pin nbr	Supply
1101-9	-5V ( -Vcc )
1101-10	+5V
1101-11	+5V

The supply currents can be measured using a Tektronics AM503B current probe or equivalent.

Supply	Power consumption ( AVG )
+5VA	+5V 3% I = 200mA
+5Vvid	+5V 3% I = 200mA
-5V	-5V 3% I = 200mA

#### Clock Check

Ensure the present of the clock to the DAC

Clock Name	Testpoint	Frequency
PCM_CLK	TP10	11.2896MHz 0.02% tolerance

#### Audio mute check

Measure the Audio mute voltage input at pin 12 of connector 1101

Status	Value
AudioMuteOn	4.7V 10%
AudioMuteOff	-8V 10%

To toggle between ON and OFF,use the following commands:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off

### 5.7.3 Audio DAC And Amplifier

Ensure that the Audio mute signal is OFF

To check the DAC and buffer amplifier,send the following commands:

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sine signal ON	Sine,1Khz on stereo
----	Press stop button	Audio Sine signal OFF	No waveform
20a	AudioPinkNois eOn	Audio Pinknoise ON	Pink Noise on 6 channels
20b	AudioPinkNois eOff	Audio Pinknoise OFF	No waveform

The audio signal ( sine or pink noise ) will also be present on the digital output ( SPDIF ).This can be checked by connecting digital signal to an amplifier with digital input. Check the I2S and audio signal at the following testpoints:

Name	Testpoint
LRCLK	TP8
SCLK	TP9
PCM_CLK	P10
PCM_OUT0	TP7
PCM_OUT1	TP27
PCM_OUT2	TP28
SPDIF	TP11
Front L/R out-Audio cinch	TP13
H/P L/R out	TP20
Analog out -Audio cinch	TP25

All waveforms can be refer to the waveform diagram in the chapter "Diagnostic software description and troubleshooting".

### 5.7.4 Video Output And Buffer Amplifier

Check DC output-level at all video cinch output : 1.0V DC  $\pm$  10%

Generate a color bar using the following software commands:

Ref.#	Command Name	Remarks
23a	VideoColDencOn	Colour DENC ON
61a	VideoColOutRGB	RGB Colourbar
61b	VideoColOutYUV	YUV Colourbar
23b	VideoColDencOff	Colourbar DENC OFF

Check the video outputs at the following testpoints:

Name	Testpoint
B_VID	TP1
G_VID	TP2
R_VID	TP3
CVBS out	TP14
S-Video-C out	TP15
S-Video-Y out	TP16
Y out	TP17
U out	TP18
V out	TP19

All waveforms can be refer to the waveform diagram in the chapter "Diagnostic Software description and troubleshooting".

### 5.7.5 Play And 16/9 Detection

Check DC voltage at S-Video-chroma output (pin 4) with a 6K8 ohm load and Scart connector (pin 8) and change the 0/6/12 input (1101-8) using the following commands:

Ref.#	Command Name	Remarks	Chroma output
25a	VideoScartLo	Sends out 0V 0.5V	<0.1V
25b	VideoScartMi	Sends out 6V 10%	2.0V 10% with load
			5.0V 10% without load
25c	VideoScartHi	Sends out 12V 10%	<0.1V

### 5.7.6 Kill Circuit

To check the functionality of the Kill circuitry, the audio outputs has to be present by the following command:

Ref.#	Command Name	Remarks	Audio output
21a	AudioPinkNoiseOn	Audio Pinknoise ON	Pink Noise on 6 channels

Check the audio outputs at the audio cinch of the A/V board : Pink Noise

Activate the Kill circuit by using the following command:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On

Check the audio outputs at the audio cinch of the A/V board : No waveform

Switch off the kill circuit by using the following command:

Ref.#	Command Name	Remarks
19b	AudioMuteOff	Audio Mute Off

Check the audio outputs at the audio cinch of the A/V board : Pink Noise

## 5.8 Test Instructions Display Board

### 5.8.1 Introduction

These test instructions are written for all versions of the display PCBAS.

The contents of the PCB can be split up into next blocks:

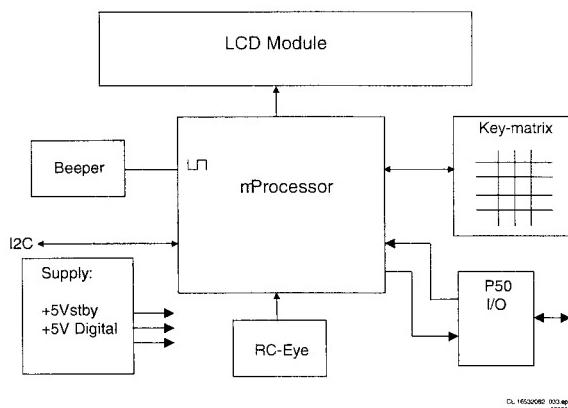


Figure 5-39

### 5.8.2 Functionality Description:

The essential component of the display PCB is the  $\mu$ P (slave). This slave works on an 8MHz resonator and has a reset circuit that is triggered by the +5Vstby. After the reset pulse, the standby control line will release the reset of the host  $\mu$ P. This host  $\mu$ P will then initialise the slave. In addition, when going to stand-by, the slave will put the host  $\mu$ P in reset. When the slave receives the right IR or key code to leave the stand-by mode, the reset of the host  $\mu$ P will be released.

Other slave functions is:

- Has inputs for RC (RC5 and RC6) and P50 (P50 controller is built in).

### 5.8.3 General

- Oscilloscope measurements have been carried out using a Philips PM3392A.
- Impedance of measuring-equipment should be  $> 1\text{M}\Omega$ .
- To do correct measurements we recommend to use supply 3122 427 22930.

### 5.8.4 Reset

Check next reset timing with an oscilloscope at pin 4 of the microprocessor.

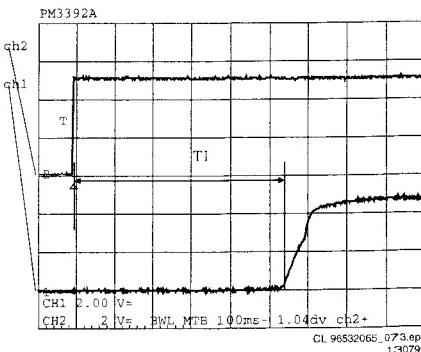


Figure 5-40

Timing: 400msec  $< T1 >$  700msec.

CH1: +5Vstby voltage at power on.

CH2: Voltage at pin 4.

### 5.8.5 Key-matrix

Connect a extra 10k $\Omega$  pull-up to pin 43 en 44 of the  $\mu$ P and check next matrix scanning at these pins.

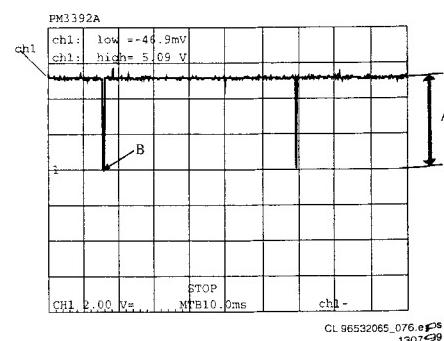


Figure 5-41

Level A: 5.0V +/-7%

Level B: 0V +/-200mV

Check matrix scanning from pin 33 until 44 of the  $\mu$ P. The results should be the same as the diagram above.

**5.8.6 I.R. Receiver**

Check at pin 29 of the  $\mu$ P if this line switches from low (< 0.3V) to high (> 4.5V), while pressing a key on a Philips RC5 or RC6 remote control.

**5.8.7 Standby LED**

In operating mode:

Check the voltage at the base of transistor 7109:  
4V +/- 10% (LED is OFF)

In standby mode:

Voltage at anode of LED 6200 is 3V3 +/- 15%

Check to ensure that the LED is ON

**5.8.8 P50 Interface**

P50 is a bi-directional serial interface, which is used for communication between video equipment. For European sets, this communication goes via pin 10 of the scart-bus. In other regions, it can be a cinch bus at the back of the set.

1. Keep the  $\mu$ P in reset by short-circuiting emitter and collector of transistor 7108, via resistor 3100 and 3104 transistor 7101 is switched on.
2. Check the voltage at the P50 output connector 1118-5: < 200mV.

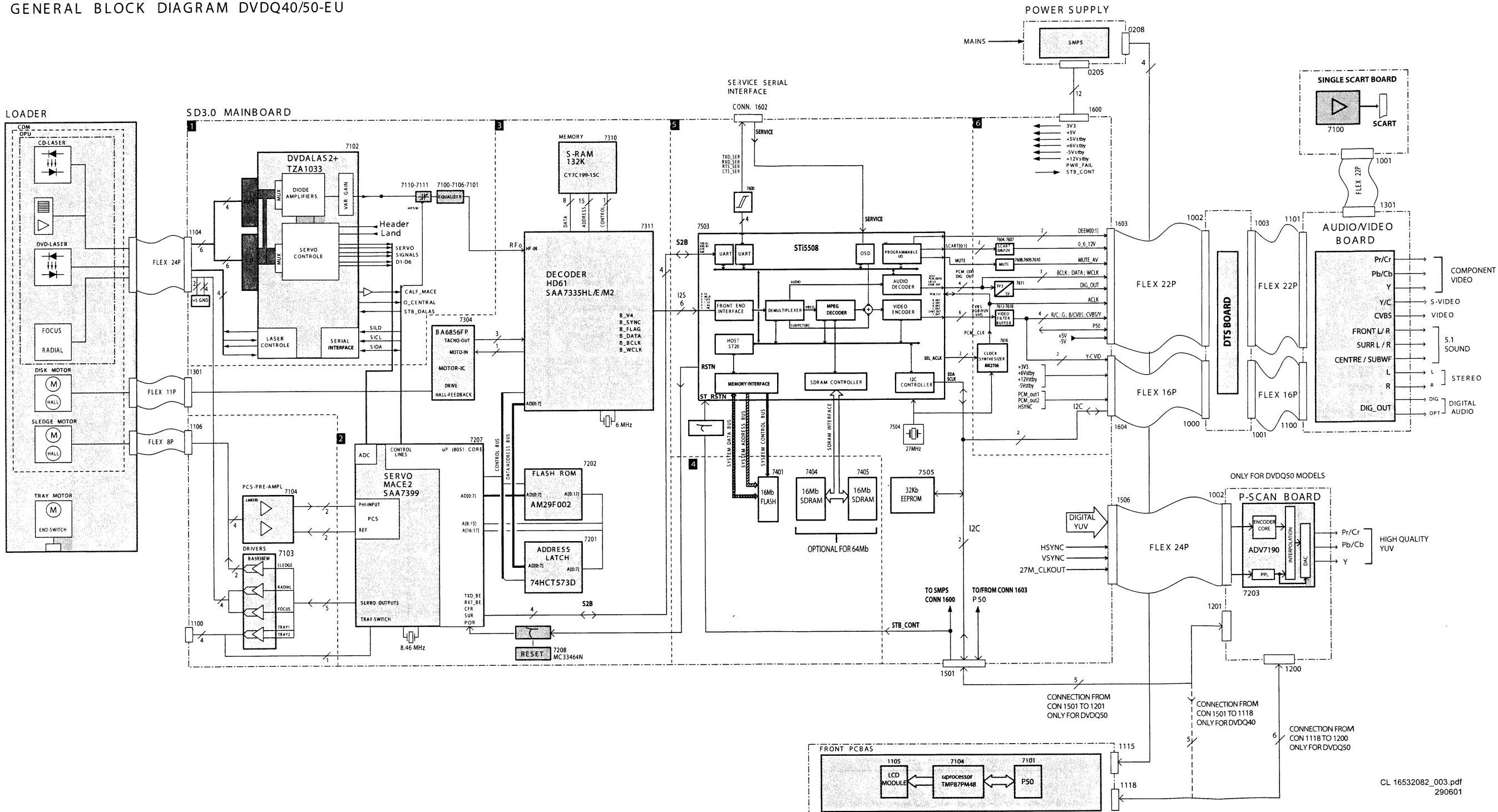
When the reset is released the  $\mu$ P output-pin becomes low and transistor 7101 is switched off.

1. Check the voltage at the P50 output connector 1118-5: 4V9 +/-5%.
2. Check also the  $\mu$ P P50 input ( $\mu$ P pin 20): 5V +/-5%.
3. Connect the P50 line (connector 1118-5) to ground.
4. Check again the  $\mu$ P P50 input ( $\mu$ P pin 20): <0V3.

## 6. Block and Wiring Diagram.

### Blockdiagramm DVD Q40-50 /0X1

GENERAL BLOCK DIAGRAM DVDQ40/50-EU



## Wiring Diagram

## ![1006] SINGLE SCART BOARD

1	U_B	9	STEREO_L	17	.....
2	GND	10	GND	18	0 6 12
3	Y_G	11	+5V	19	KILL
4	GND	12	STEREO_R	20	.....
5	V_R	13	.....	21	.....
6	GND	14	-5V	22	P50
7	.....	15	CVBS		
8	GND	16	GND		

22 1001 FFC 1

## [1001] A / V BOARD

1	U_B	9	STEREO_L	17	CIN
2	GND	10	GND	18	0 6 12
3	Y_G	11	+5V	19	KILL
4	GND	12	STEREO_R	20	I2C_CLK
5	V_R	13	+12VSTBY	21	I2C_CLD
6	GND	14	-5V	22	P50
7	YIN	15	CVBS		
8	GND	16	GND		

22 1301 FFC 1

1	P50	9	-5V	17	GND
2	B(U)	10	+5V	18	PCM_CLK
3	G(Y)	11	+5VID	19	CENTER_ON
4	GND	12	KILL	20	STEREO_MUTE
5	R(V)	13	GND	21	DIG_OUT
6	CVBS	14	PCM_OUT	22	GND
7	GND	15	LRCLK		
8	0 6 12	16	SCLK		

22 1100 FFC 1

22 1101 FFC 1

## D1 : DVD STEP 2001

(DVD Q40/Q50)

## WIRING / BLOCK DIAGRAM

## \* [1007]

P.SCAN  
BOARD

1	.....	9	GND	17	GND
2	YB(0)	10	YB(4)	18	H SYNC
3	GND	11	GND	19	.....
4	YB(1)	12	YB(5)	20	V SYNC
5	GND	13	GND	21	.....
6	YB(2)	14	YB(6)	22	27M_CLK
7	GND	15	GND		
8	YB(3)	16	YB(7)		

1	SCL	9	GND	17	GND
2	GND	10	YB(4)	18	H SYNC
3	SDA	11	GND	19	.....
4	STB_CONTROL	12	YB(5)	20	V SYNC
5	P50	13	GND	21	.....
6	+5VD	14	YB(6)	22	27M_CLK
7	1200	15	GND		
8	PH	16	YB(7)		

2001 FFC

\* [1114]

## [1003]

DTS  
BD

1	GND	9	+12VSTBY
2	H_SYNC	10	SDA
3	GND	11	+5V AV
4	PCM_OUT2	12	3V3A
5	_AV	13	GND
6	PCM_OUT1	14	C
7	_AV	15	GND
8	SCL	16	Y

1	P50	9	-5V	17	GND
2	B(U)	10	+5V	18	SYS_CLK_AV
3	G(Y)	11	+5VID	19	CENTER_ON
4	GND	12	KILL	20	STEREO_MUTE
5	R(V)	13	GND	21	SPDIF_AV
6	CVBS	14	PCM_OUT	22	GND
7	GND	15	LRCLK		
8	0 6 12	16	SCLK		

16 1000 FFC 1

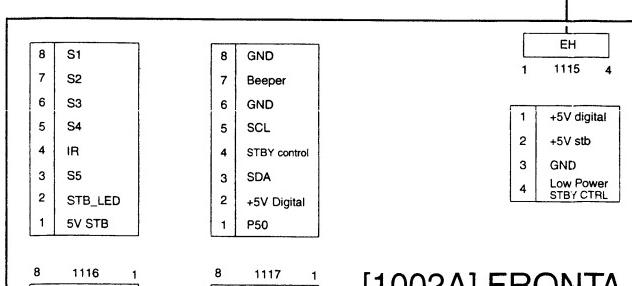
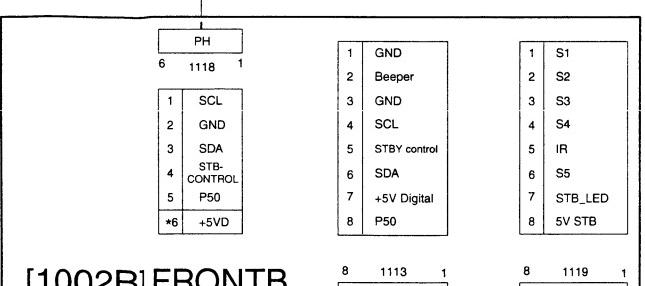
22 1002 FFC 1

## ASD3.X LOADER ASSY

[1005]  
POWER  
SUPPLY  
BOARD

1	3V3	7	GND
2	3V3	8	GND
3	+5VDIGITAL	9	-5V
4	+5VSTBY	10	STB_CONTROL
5	+5V AV	11	+12VSTBY
6	GND	12	GND

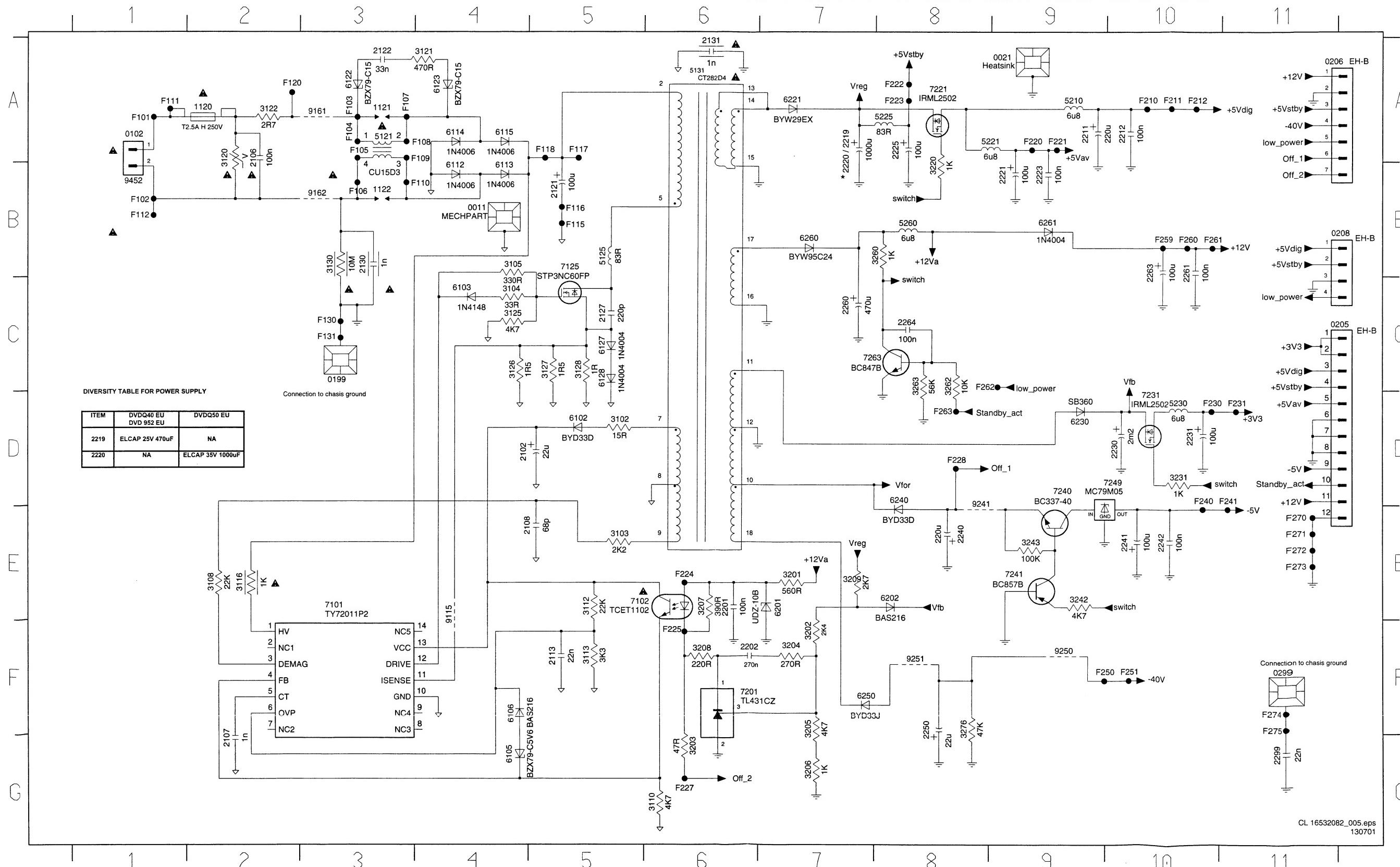
1	205	12	EH
1	208	4	EH

LEGEND : \* FOR DVD Q50  
! FOR EURO VERSION  
# FOR DVD Q40

## **7. Electrical Diagrams And Print-Layouts**

**Power Supply Unit STEP 2001 EURO**

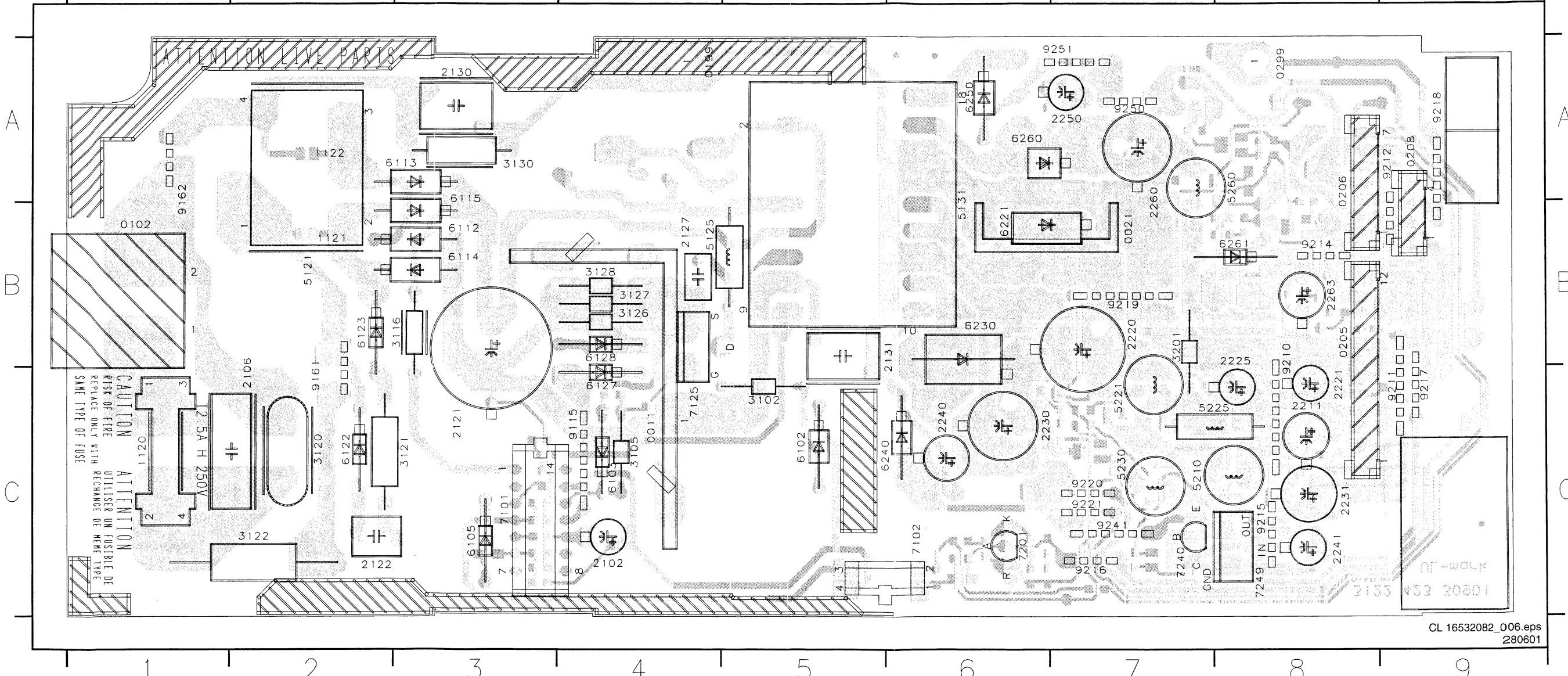
0011	B4	0299	F11	2109	B5	2131	A6	2221	B9	2242	E10	2264	C8	3106	A3	3120	A2	3201	E1	3209	E1	3251	F9	3264	B10	5131	A6	5241	D8	6112	B4	6201	E1	6260	B1	/201	F6	/251	G9	9162	B3
0021	A9	1120	A2	2110	G5	2201	E6	2222	A7	2250	F8	2255	C9	3108	E2	3121	A4	3202	E7	3220	E8	3252	C9	3265	B9	5161	A3	5250	F8	6113	B4	6202	E1	6261	B9	/204	C9	/261	G9	9221	B3
0101	B1	1121	A3	2111	A5	2202	F6	2223	B9	2251	F10	2272	F10	3110	G6	3122	A2	3203	G7	3223	C10	3253	F9	3266	B8	5162	B3	5260	B8	6114	A4	6220	A7	6262	C8	/211	A8	/262	C8	9241	
0102	A1	1122	B3	2113	F5	2203	F7	2225	A8	2252	F7	2279	G11	3111	E5	3125	C4	3204	F7	3224	D10	3254	F9	3267	B8	5162	A9	6102	F10	6115	A4	6221	A7	6270	F10	/231	D10	/263	C8	9250	
0199	C3	2102	D4	2121	B5	2211	A9	2230	D10	2260	C7	2302	D5	3112	E5	3126	C4	3205	G7	3224	E9	3256	B8	3271	F10	5210	A9	6103	C4	6123	A3	6230	D9	6271	F10	/240	D9	/264	B8	9251	
0205	C11	2106	A2	2122	A3	2212	A10	2231	D10	2261	B10	3103	C5	3113	E5	3127	C5	3206	G7	3224	F9	3257	F8	3276	F10	5221	A8	6105	D4	6124	A3	6234	D8	6274	E1	/241	E9	/265	A2	9261	
0206	A11	2107	G2	2127	C5	2219	A7	2240	E8	2262	E7	3104	C4	3115	E4	3128	C5	3207	H6	3224	G9	3258	F8	3275	F10	5225	A3	6106	F4	6125	C5	6241	E8	7102	F6	/249	D10	/264	B8	9270	
0208	B11	2108	E5	2130	B3	2220	A7	2241	E10	2263	B10	3105	B4	3116	E2	3130	B3	3208	H6	3225	F8	3250	C8	3263	C8	5125	B5	5230	D10	6111	B5	6128	C5	6250	F7	7125	B5	/250	F9	9161	A3



**Layout Power Supply STEP 2001 EURO (Top View)**

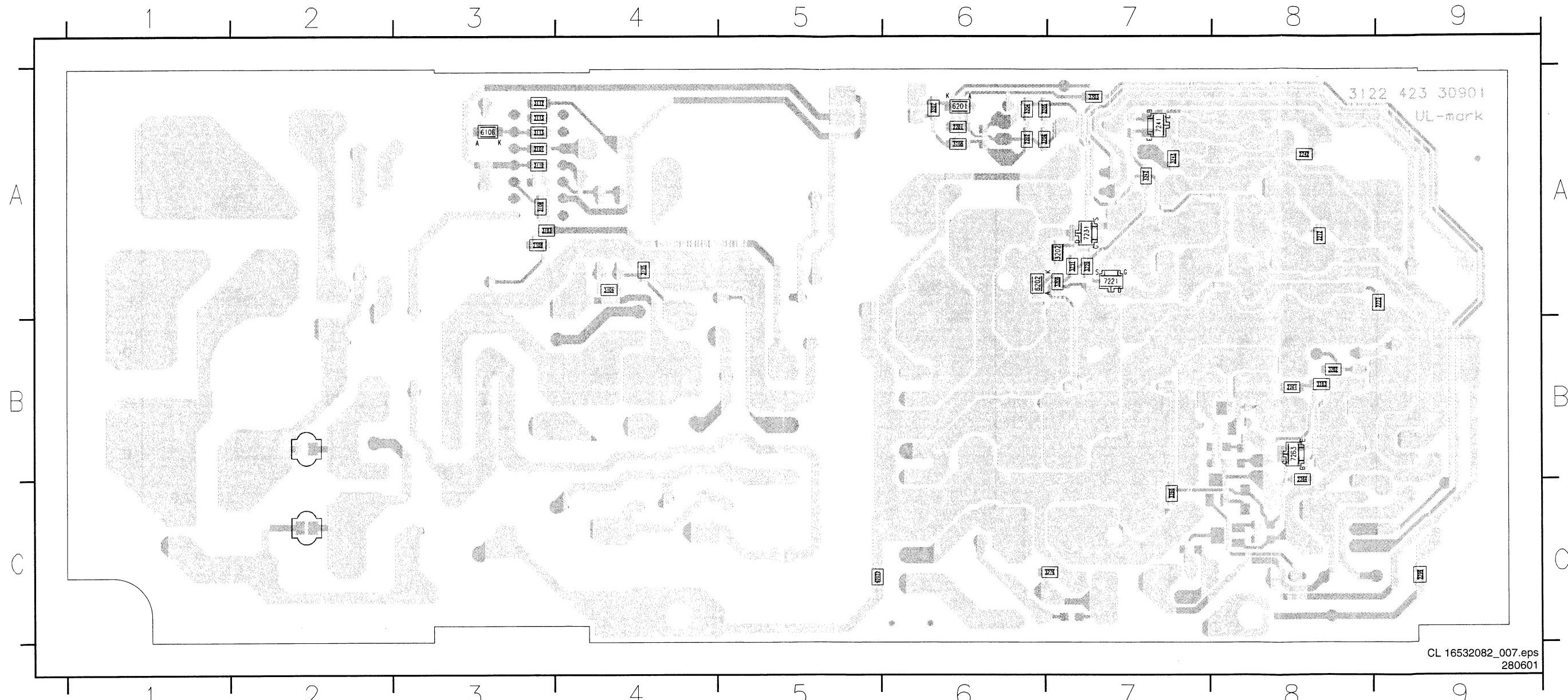
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0021	B7	0299	A8	2122	C2	2221	C8	2250	A7	3102	C5	3121	C3	3251	A7	5161	B2	5241	C7	6112	B3	6128	B4	6260	A6	7201	C6	9122	C2	9215	C8	9241	C7
0101	B1	1120	C1	2127	B4	2222	B6	2251	A8	3105	C4	3122	C2	3261	A8	5162	A1	5250	A7	6113	A3	6220	B6	6261	B8	7204	B8	9161	C2	9216	C7		
0102	B1	2102	C4	2130	B3	2225	B8	2252	A6	3106	A2	3126	B4	3267	A8	5210	C7	5260	A8	6114	B3	6221	B6	6270	C6	7240	C7	9162	A1	9217	C9		
0199	A4	2106	C2	2131	B6	2230	C6	2260	B7	3111	A4	3127	B4	3271	C9	6102	C5	6115	A3	6230	C2	6240	C5	7101	C3	7250	A7	9211	C9	9251	A7		
0205	B8	2109	B4	2211	C8	2231	C8	2262	A7	3115	C4	3128	B4	5121	B2	5221	C7	6103	C4	6122	C2	6241	C5	7102	C6	7261	B8	9212	A9	9220	C7		
0206	A8	2111	A5	2219	C7	2240	C6	2263	B8	3116	B3	3130	A3	5125	B4	5225	C7	6105	C3	6123	B2	6241	C5	7101	C3	7250	A7	9211	B7	9261	B8		

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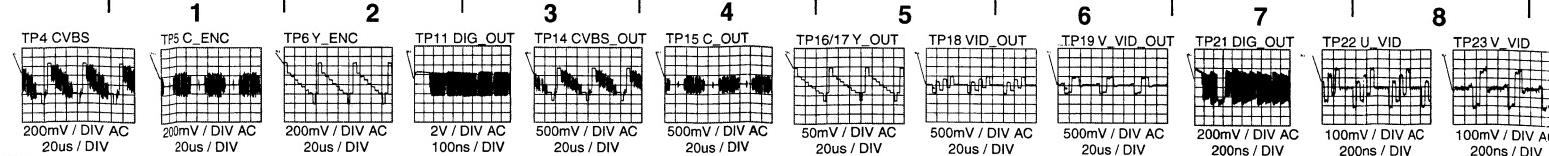
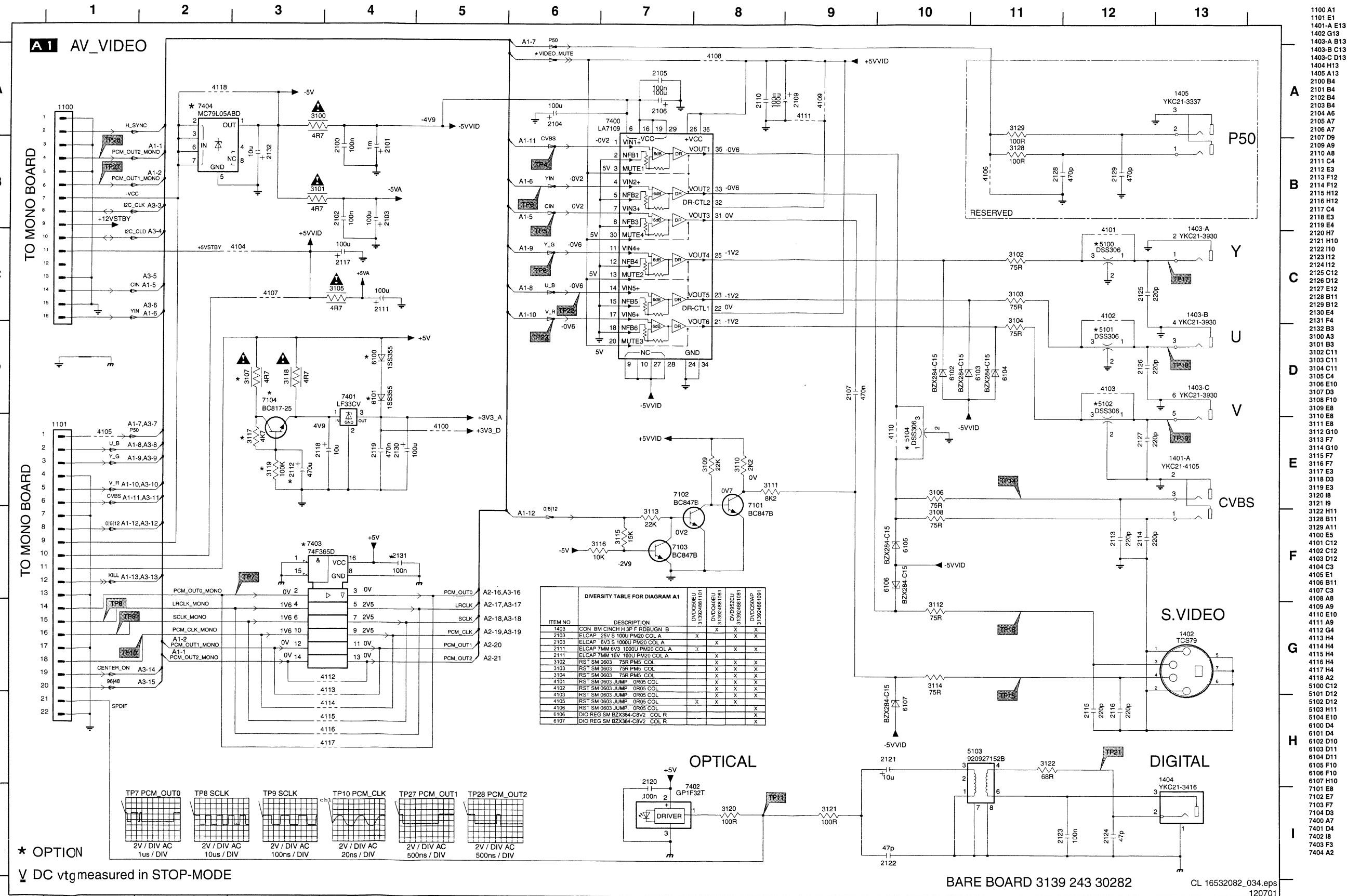


#### **Layout Power Supply Unit STEP 2001 EURO (Bottom View)**

2107 A3 2201 A6 2223 A9 2265 B8 3108 A3 3125 A4 3205 A6 3209 A7 3241 A7 3252 C8 3262 B8 3266 B8 6202 A6 7241 A7 7264 B8  
 2108 A3 2202 A6 2242 A8 2299 C9 3110 A3 3202 A7 3206 A6 3220 A7 3242 A7 3253 C7 3263 B8 3276 C7 6262 C8 7251 C8 92022 C5  
 2110 A3 2203 A6 2261 B8 3103 A3 3112 A3 3203 A7 3207 A6 3230 A7 3243 A7 3254 C8 3264 B8 6106 A3 7221 A7 7262 C8  
 2113 A3 2212 A8 2264 B8 3104 A4 3113 A3 3204 A6 3208 A6 3231 A7 3250 C7 3260 C7 3265 B8 6201 A6 7231 A7 7263 B8

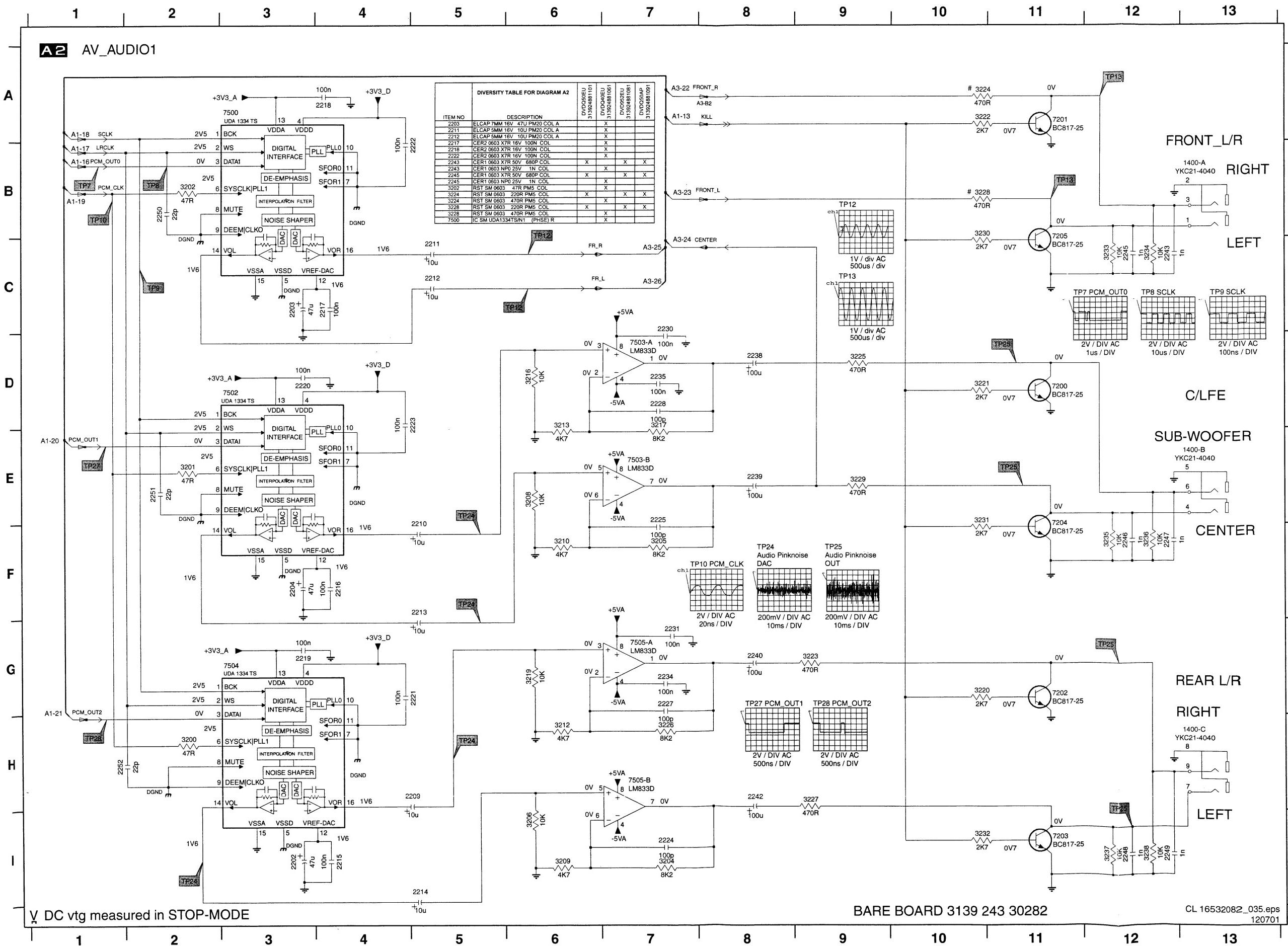


## A/V Board (Video)



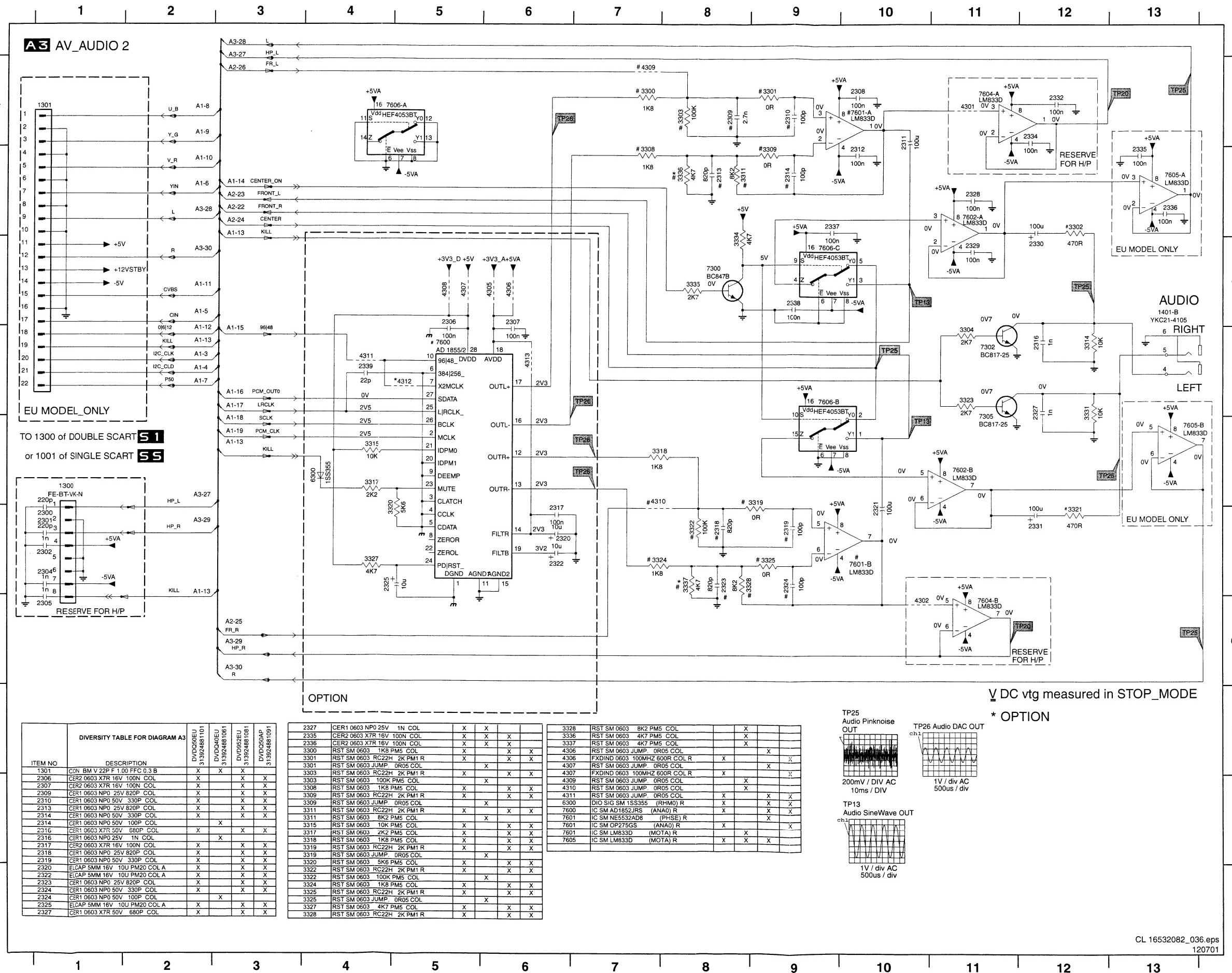
1100 A1  
1101 E1  
1401-A E13  
1402 G13  
1403-B B13  
1403-C C13  
1404 H13  
1405 A13  
2100 B4  
2101 B4  
2102 B4  
2103 B4  
2104 A6  
2105 A7  
2106 A7  
2107 D9  
2109 A9  
2110 A6  
2111 C4  
2112 E3  
2113 F12  
2114 F12  
2115 H12  
2117 C4  
2118 E3  
2119 E4  
2120 H7  
2121 H10  
2122 I10  
2123 I12  
2124 I12  
2125 C12  
2126 D12  
2127 E12  
2128 B11  
2129 B12  
2130 E4  
2131 F4  
2132 B3  
3100 A3  
3101 B3  
3102 C11  
3103 C11  
3104 C11  
3105 C4  
3106 E10  
3107 D3  
3108 F10  
3109 E8  
3110 E8  
3111 E8  
3112 G10  
3113 F7  
3114 G10  
3115 F7  
3117 E3  
3118 D3  
3119 E3  
3120 I8  
3121 I9  
3122 H11  
3128 B11  
3129 A11  
4100 E5  
4101 C12  
4102 C12  
4103 D12  
4104 C3  
4105 E1  
4106 C11  
4107 C3  
4108 A8  
4109 A9  
4110 E10  
4111 A9  
4112 G4  
4113 H4  
4114 H4  
4115 H4  
4116 H4  
4117 H4  
4118 A2  
5100 C12  
5101 D12  
5102 D12  
5103 H11  
5104 E10  
6100 D4  
6101 D4  
6102 D10  
6103 D11  
6104 D11  
6105 F10  
6106 F10  
6107 H10  
7101 E8  
7102 E7  
7103 F7  
7104 D3  
7400 A7  
7401 D4  
7402 I8  
7403 F3  
7404 A2

## A/V Board (Audio 1)



1400-A B13  
1400-B E13  
1400-C H13  
2202 I3  
2203 C3  
2204 F3  
2209 H5  
2210 F5  
2211 C5  
2212 C5  
2213 F5  
2214 I5  
2215 I4  
2216 F4  
2217 C4  
2218 A4  
2219 G3  
2220 D3  
2221 G5  
2222 B5  
2223 D5  
2224 I7  
2225 E7  
2227 G7  
2228 D7  
2230 C7  
2231 G7  
2234 G7  
2235 D7  
2238 D8  
2239 E8  
2240 G8  
2242 H8  
2243 C12  
2245 C12  
2247 F12  
2248 H2  
2249 H2  
2250 B2  
2251 E2  
2252 H1  
3200 H2  
3201 E2  
3202 B2  
3204 I7  
3205 F7  
3206 I6  
3208 E6  
3209 I6  
3210 F6  
3212 H6  
3213 D6  
3216 D6  
3217 D7  
3219 G6  
3220 G10  
3221 D10  
3222 A10  
3223 G9  
3224 A10  
3225 D9  
3226 H7  
3227 H9  
3228 B10  
3229 E9  
3230 B10  
3231 E10  
3232 I10  
3233 C12  
3234 C12  
3235 F12  
3237 H2  
3238 I2  
7200 D11  
7201 A11  
7202 G11  
7203 H11  
7204 F11  
7205 C11  
7500 A3  
7502 D3  
7503-A D7  
7503-B E7  
7504 G3  
7505-A G7  
7505-B H7

## A/V Board (Audio 2)



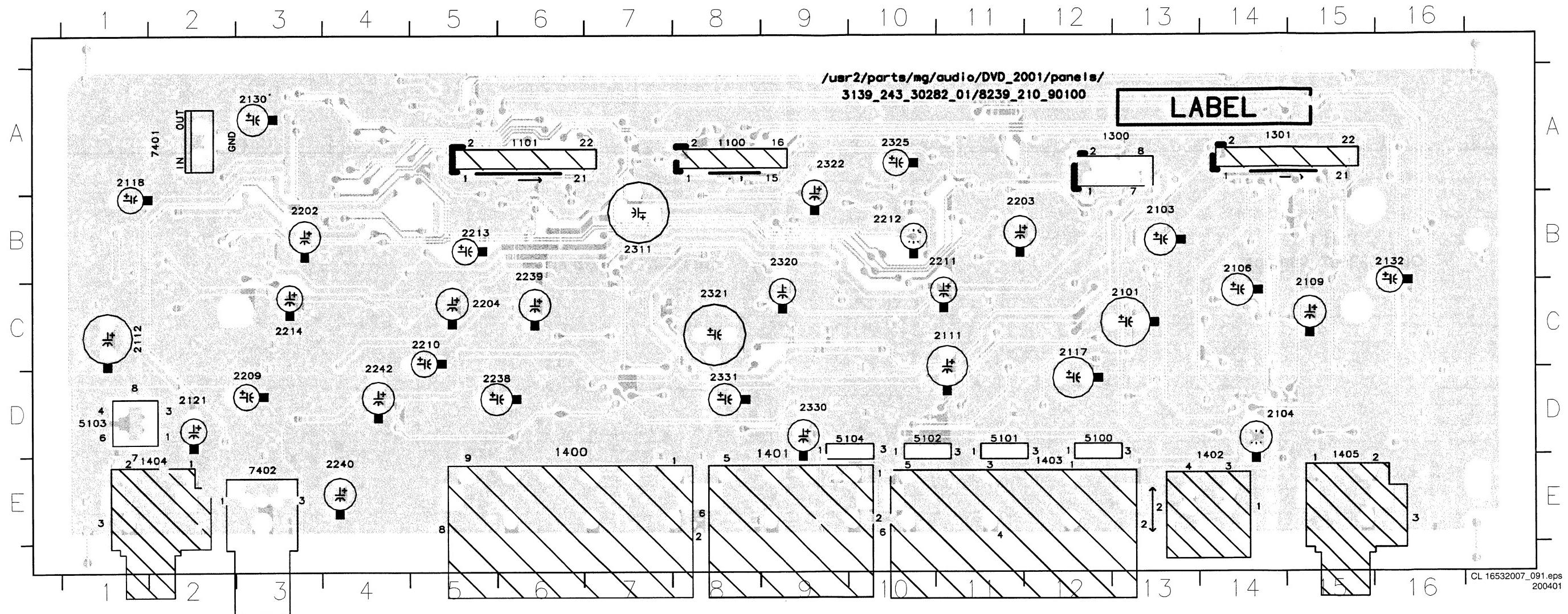
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1301 A1  
1401-B C13  
1326 E10  
1331 F1  
1332 B7  
1333 E5  
1334 E7  
1335 E5  
1336 C5  
1337 C6  
1338 F6  
2308 A10  
1339 F6  
2310 A9  
1340 A11  
2311 A10  
1341 B8  
2312 B10  
1342 B10  
2313 B8  
1343 B12  
2314 B9  
1344 C8  
2316 D12  
1345 D11  
2317 F6  
1346 D11  
2318 F8  
1347 E10  
2319 F9  
1348 F12  
2320 F6  
1349 F8  
2321 F10  
1350 G11  
2322 F6  
1351 E4  
2323 F8  
1352 A8  
1353 E8

1321 C11  
1324 E10  
1326 E11  
1331 A7  
1332 B7  
1333 E5  
1334 E7  
1335 E5  
1336 E7  
1337 F6  
1338 F5  
1339 F6  
1340 A11  
1341 B8  
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1353 E8

1330 A7  
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1332 B12  
1333 A8  
1334 D11  
1335 B7  
1336 C12  
1337 B9  
1338 C9  
1339 D4  
1340 A7  
1341 A9  
1342 B12  
1343 A8  
1344 B7  
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1353 B13  
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1357 D4  
1358 A7  
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1366 E4  
1367 E7  
1368 F4  
1369 F4  
1370 B7  
1371 B7  
1372 C11  
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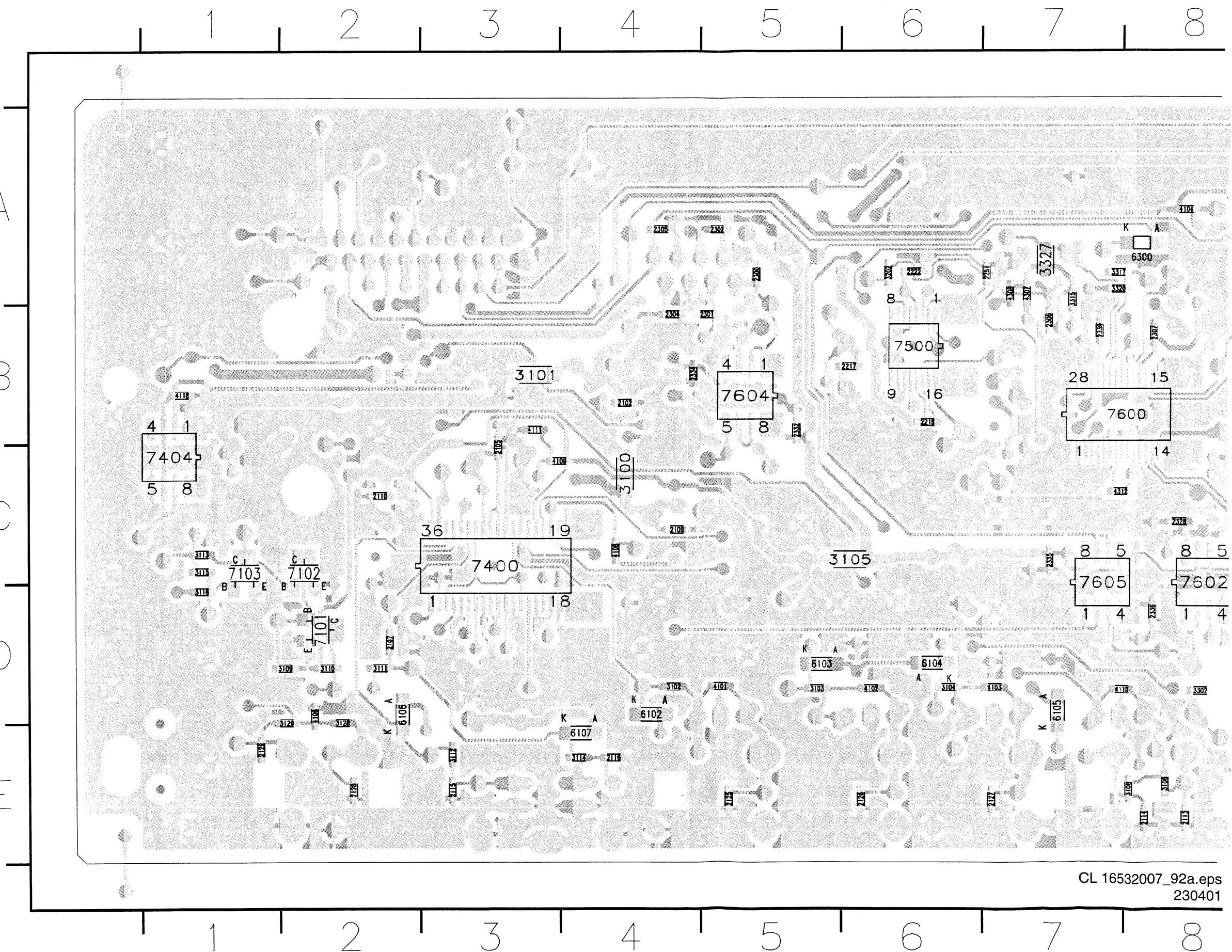
**Layout A/V Board (Top View)**

1100 A8	1301 A14	1402 E14	1405 E15	2104 D14	2111 C11	2118 A1	2132 B16	2204 C5	2211 B11	2214 C3	2240 E4	2320 B9	2325 A10	5100 D12	5103 D1	7402 E3
1101 A6	1400 D6	1403 E12	2101 C13	2106 B14	2112 C12	2121 D2	2202 B3	2209 C5	2213 B5	2238 D5	2242 C4	2321 C8	2330 A9	5101 D11	5104 D10	
1300 A13	1401 D9	1404 E2	2103 B13	2109 C15	2117 C12	2130 A3	2203 B11	2210 C5	2213 B5	2239 B6	2311 B7	2322 A9	2331 A8	5102 D10	7401 A2	

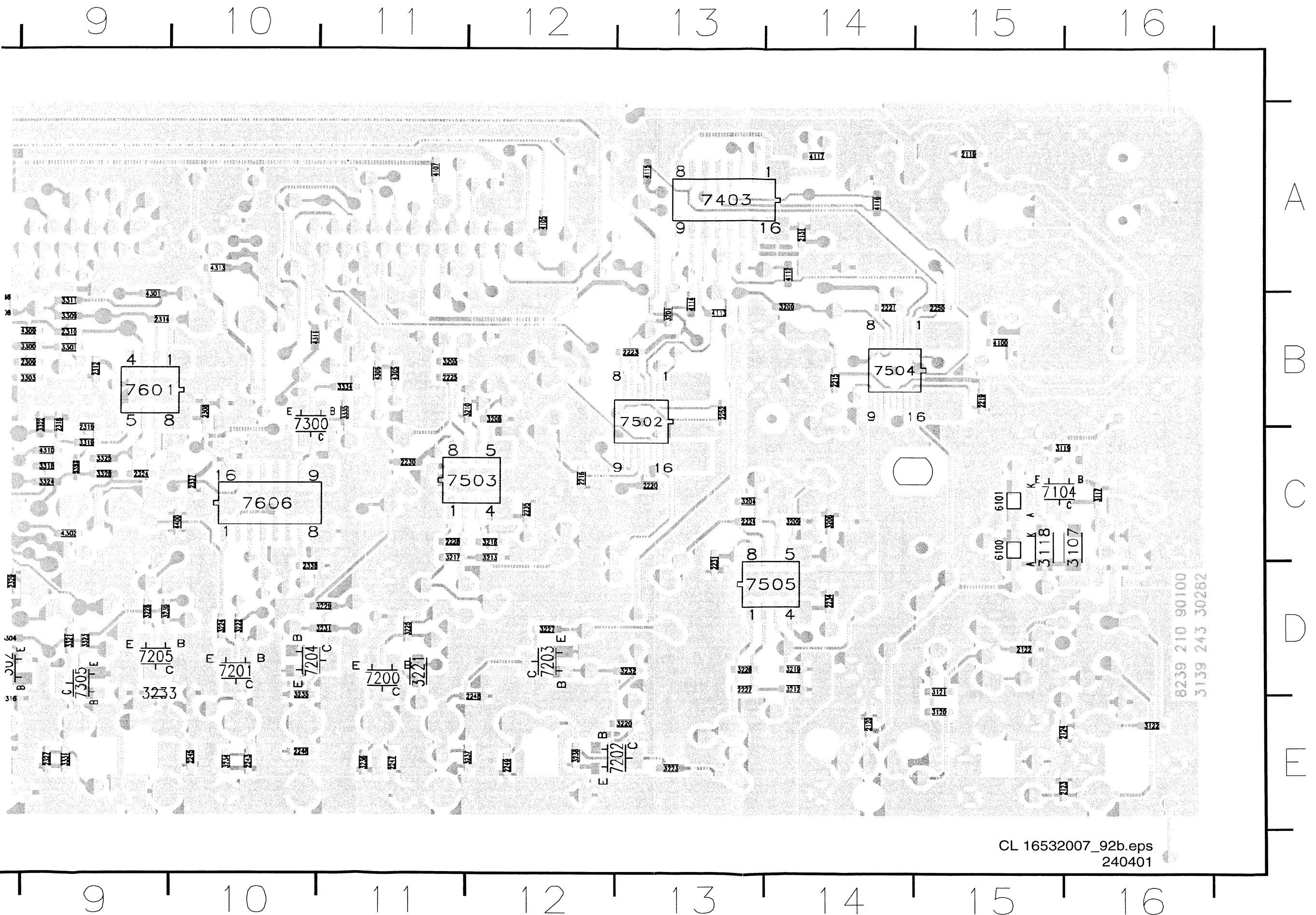


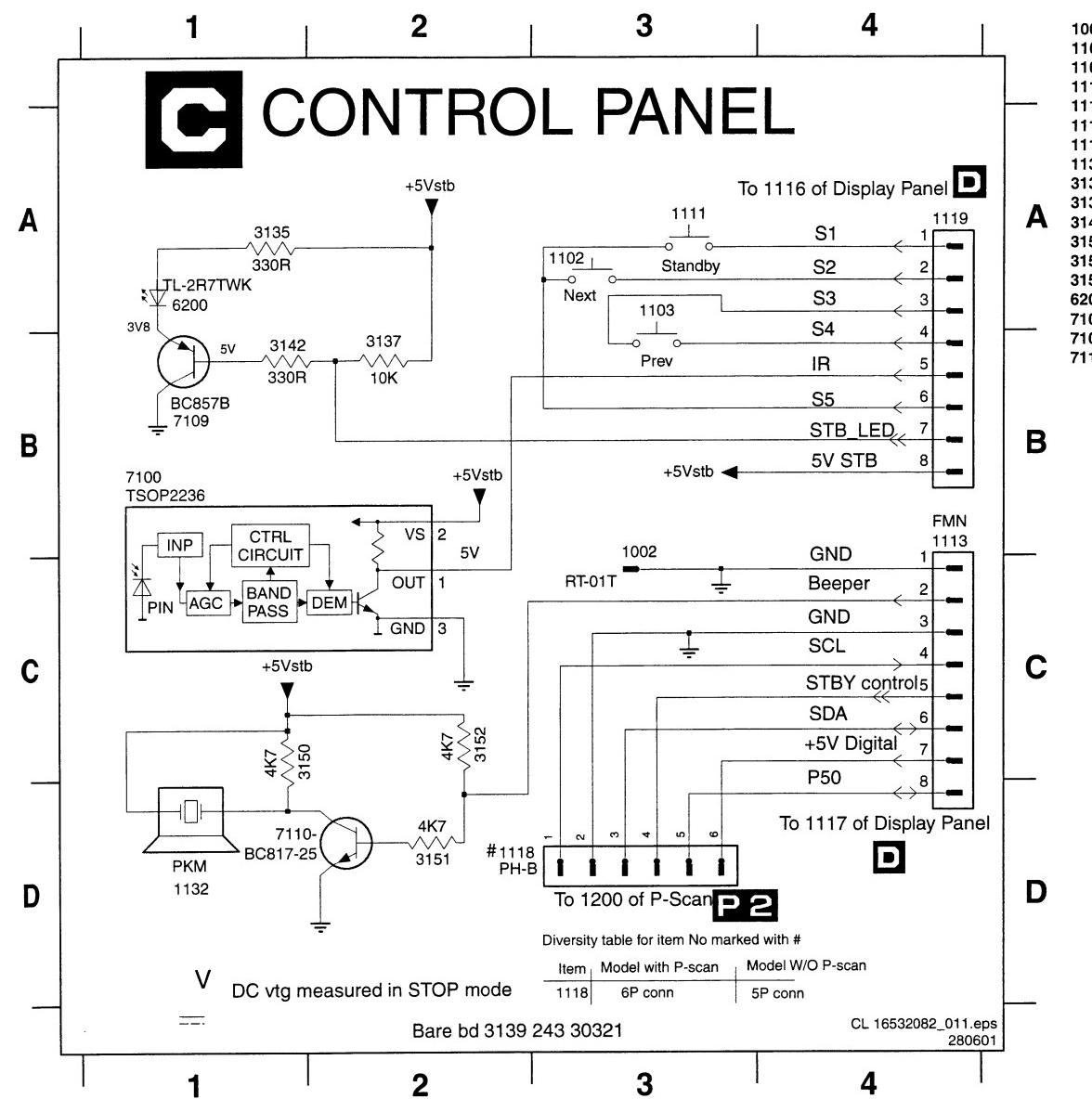
**A/V Board (Overview Bottom View)**

2100	C4	2125	E5	2223	B13	2249	F12	2312	9	3109	D2	3219	C11	3232	E9	4109	C3	6106	D2	7302	D8
100	CB	2126	E6	2224	B13	2250	F12	2313	14	3110	D2	3220	C11	3233	10	4110	C3	6107	D2	7400	DC
100	CC	2127	E7	2225	B13	2251	F12	2314	15	3111	D2	3221	C11	3234	11	4111	C3	6101	D2	7403	A13
100	CC	2128	E8	2226	B13	2252	F12	2315	16	3112	D2	3222	C11	3235	12	4112	C3	6102	D2	7404	C1
100	CC	2129	E9	2227	B13	2253	F12	2316	17	3113	D2	3223	C11	3236	13	4113	C3	6103	D2	7500	B6
100	CC	2130	E10	2228	B13	2254	F12	2317	18	3114	D2	3224	C11	3237	14	4114	C3	6104	D2	7503	A13
100	CC	2131	E11	2229	B13	2255	F12	2318	19	3115	D2	3225	C11	3238	15	4115	C3	6105	D2	7504	13
100	CC	2132	E12	2230	B13	2256	F12	2319	20	3116	D2	3226	C11	3239	16	4116	C3	6106	D2	7505	14
100	CC	2133	E13	2231	B13	2257	F12	2320	21	3117	D2	3227	C11	3240	17	4117	C3	6107	D2	7506	15
100	CC	2134	E14	2232	B13	2258	F12	2321	22	3118	D2	3228	C11	3241	18	4118	C3	6108	D2	7600	16
100	CC	2135	E15	2233	B13	2259	F12	2322	23	3119	D2	3229	C11	3242	19	4119	C3	6109	D2	7605	C7
100	CC	2136	E16	2234	B13	2260	F12	2323	24	3120	D2	3230	C11	3243	20	4120	C3	6110	D2	7606	C10
100	CC	2137	E17	2235	B13	2261	F12	2324	25	3121	D2	3231	C11	3244	21	4121	C3	6101	D2	7607	D8
100	CC	2138	E18	2236	B13	2262	F12	2325	26	3122	D2	3232	C11	3245	22	4122	C3	6102	D2	7608	DC
100	CC	2139	E19	2237	B13	2263	F12	2326	27	3123	D2	3233	C11	3246	23	4123	C3	6103	D2	7609	A13
100	CC	2140	E20	2238	B13	2264	F12	2327	28	3124	D2	3234	C11	3247	24	4124	C3	6104	D2	7610	13
100	CC	2141	E21	2239	B13	2265	F12	2328	29	3125	D2	3235	C11	3248	25	4125	C3	6105	D2	7611	14
100	CC	2142	E22	2240	B13	2266	F12	2329	30	3126	D2	3236	C11	3249	26	4126	C3	6106	D2	7612	15
100	CC	2143	E23	2241	B13	2267	F12	2330	31	3127	D2	3237	C11	3250	27	4127	C3	6107	D2	7613	16
100	CC	2144	E24	2242	B13	2268	F12	2331	32	3128	D2	3238	C11	3251	28	4128	C3	6108	D2	7614	17
100	CC	2145	E25	2243	B13	2269	F12	2332	33	3129	D2	3239	C11	3252	29	4129	C3	6109	D2	7615	18
100	CC	2146	E26	2244	B13	2270	F12	2333	34	3130	D2	3240	C11	3253	30	4130	C3	6110	D2	7616	19
100	CC	2147	E27	2245	B13	2271	F12	2334	35	3131	D2	3241	C11	3254	31	4131	C3	6111	D2	7617	20
100	CC	2148	E28	2246	B13	2272	F12	2335	36	3132	D2	3242	C11	3255	32	4132	C3	6112	D2	7618	21
100	CC	2149	E29	2247	B13	2273	F12	2336	37	3133	D2	3243	C11	3256	33	4133	C3	6113	D2	7619	22
100	CC	2150	E30	2248	B13	2274	F12	2337	38	3134	D2	3244	C11	3257	34	4134	C3	6114	D2	7620	23
100	CC	2151	E31	2249	B13	2275	F12	2338	39	3135	D2	3245	C11	3258	35	4135	C3	6115	D2	7621	24
100	CC	2152	E32	2250	B13	2276	F12	2339	40	3136	D2	3246	C11	3259	36	4136	C3	6116	D2	7622	25
100	CC	2153	E33	2251	B13	2277	F12	2340	41	3137	D2	3247	C11	3260	37	4137	C3	6117	D2	7623	26
100	CC	2154	E34	2252	B13	2278	F12	2341	42	3138	D2	3248	C11	3261	38	4138	C3	6118	D2	7624	27
100	CC	2155	E35	2253	B13	2279	F12	2342	43	3139	D2	3249	C11	3262	39	4139	C3	6119	D2	7625	28
100	CC	2156	E36	2254	B13	2280	F12	2343	44	3140	D2	3250	C11	3263	40	4140	C3	6120	D2	7626	29
100	CC	2157	E37	2255	B13	2281	F12	2344	45	3141	D2	3251	C11	3264	41	4141	C3	6106	D2	7627	30
100	CC	2158	E38	2256	B13	2282	F12	2345	46	3142	D2	3252	C11	3265	42	4142	C3	6107	D2	7628	31
100	CC	2159	E39	2257	B13	2283	F12	2346	47	3143	D2	3253	C11	3266	43	4143	C3	6108	D2	7629	32
100	CC	2160	E40	2258	B13	2284	F12	2347	48	3144	D2	3254	C11	3267	44	4144	C3	6109	D2	7630	33
100	CC	2161	E41	2259	B13	2285	F12	2348	49	3145	D2	3255	C11	3268	45	4145	C3	6110	D2	7631	34
100	CC	2162	E42	2260	B13	2286	F12	2349	50	3146	D2	3256	C11	3269	46	4146	C3	6111	D2	7632	35
100	CC	2163	E43	2261	B13	2287	F12	2350	51	3147	D2	3257	C11	3270	47	4147	C3	6112	D2	7633	36
100	CC	2164	E44	2262	B13	2288	F12	2351	52	3148	D2	3258	C11	3271	48	4148	C3	6113	D2	7634	37
100	CC	2165	E45	2263	B13	2289	F12	2352	53	3149	D2	3259	C11	3272	49	4149	C3	6114	D2	7635	38
100	CC	2166	E46	2264	B13	2290	F12	2353	54	3150	D2	3260	C11	3273	50	4150	C3	6115	D2	7636	39
100	CC	2167	E47	2265	B13	2291	F12	2354	55	3151	D2	3261	C11	3274	51	4151	C3	6116	D2	7637	40
100	CC	2168	E48	2266	B13	2292	F12	2355	56												

**A/V Board (Part 1 Bottom View)**

## A/V Board (Part 2 Bottom View)



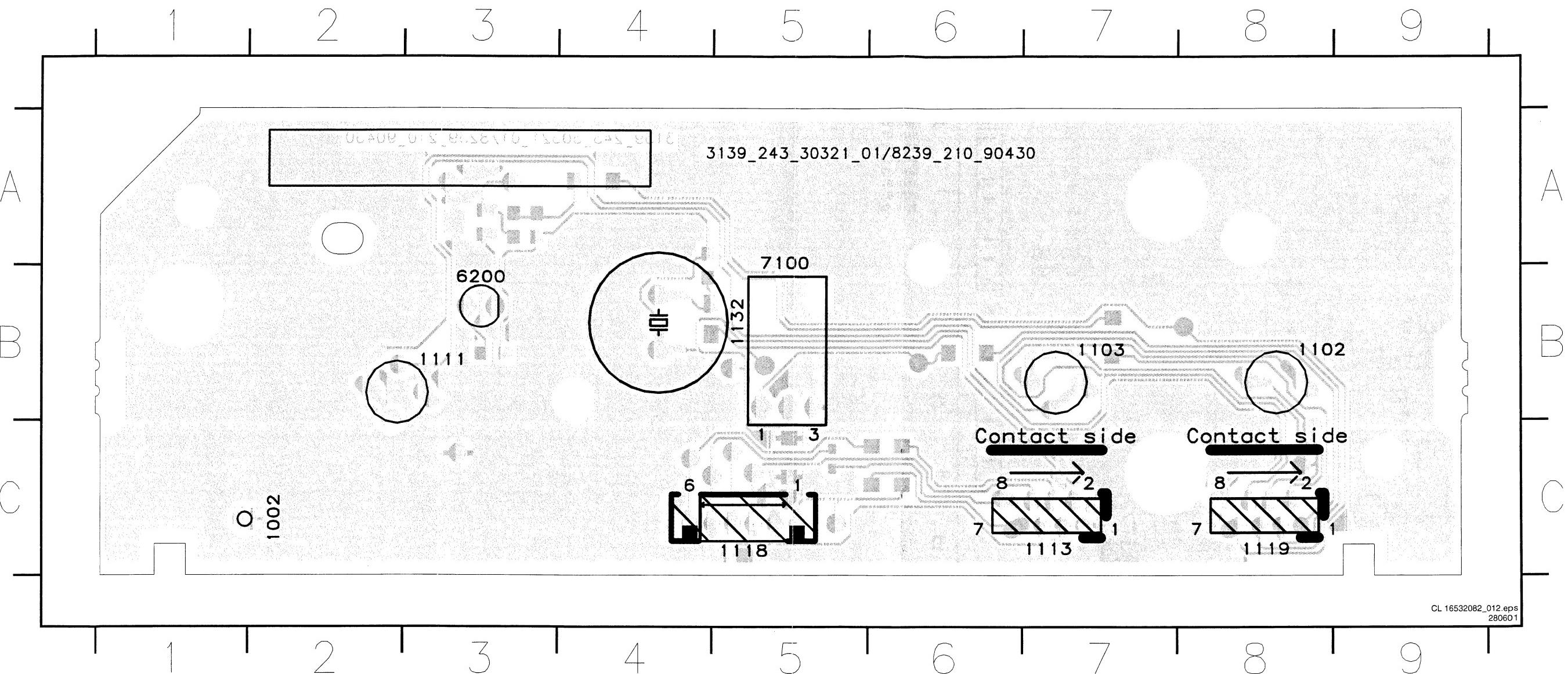
**Control Panel**

1002 C3  
1102 A3  
1103 A3  
1111 A3  
1113 B4  
1118 D3  
1119 A4  
1132 D1  
3135 A1  
3137 B2  
3142 B1  
3150 C1  
3151 D2  
3152 C2  
6200 A1  
7100 B1  
7109 B1  
7110-D2

**B****C****D****A****D****C****B**

**Layout Control Panel (Top View)**

1002 C2 1102 B8 1103 B7 1111 B3 1113 C7 1118 C5 1119 C8 1132 B5 6200 B3 7100 A5



**Layout Control Panel (Bottom View)**

3135 B7    3142 A7    4134 B3    4136 C4    4138 C5    4305 C5  
3137 A7    3150 B6    4135 B4    4137 C4    4139 A6    6105 B6    7109 A7

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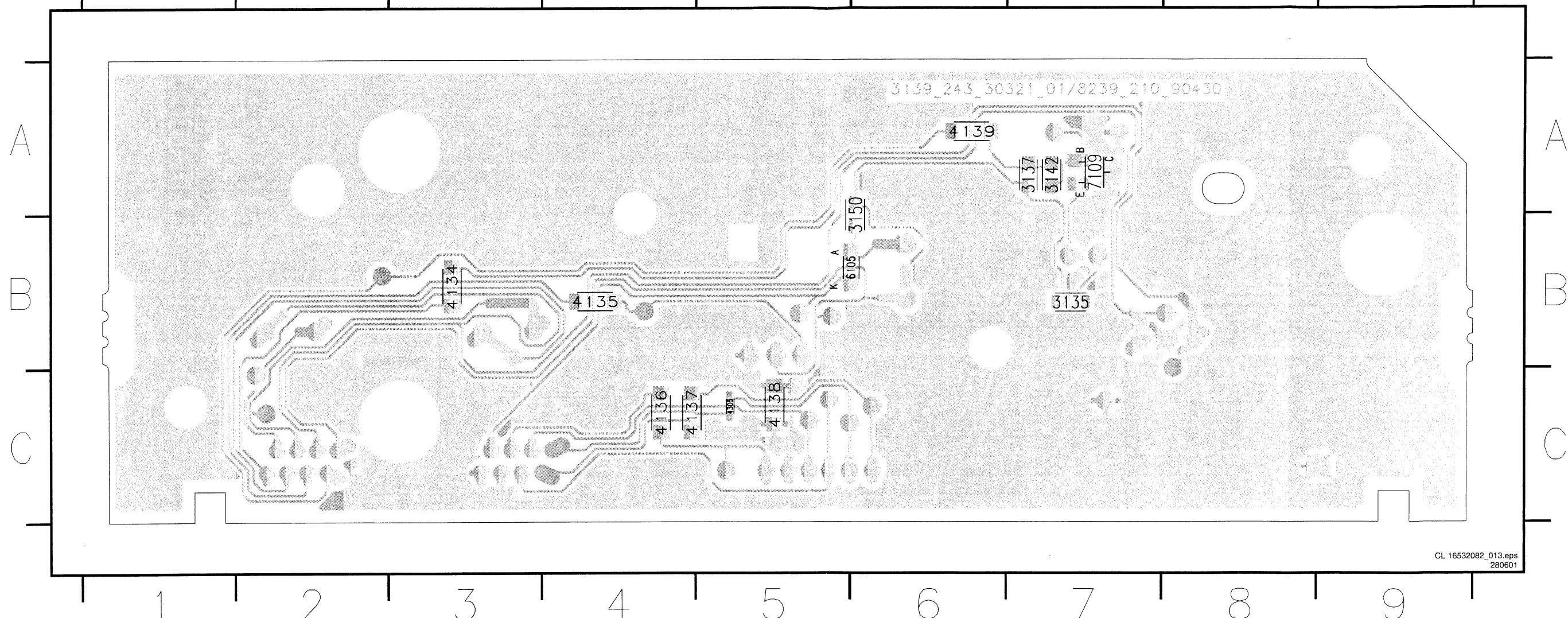
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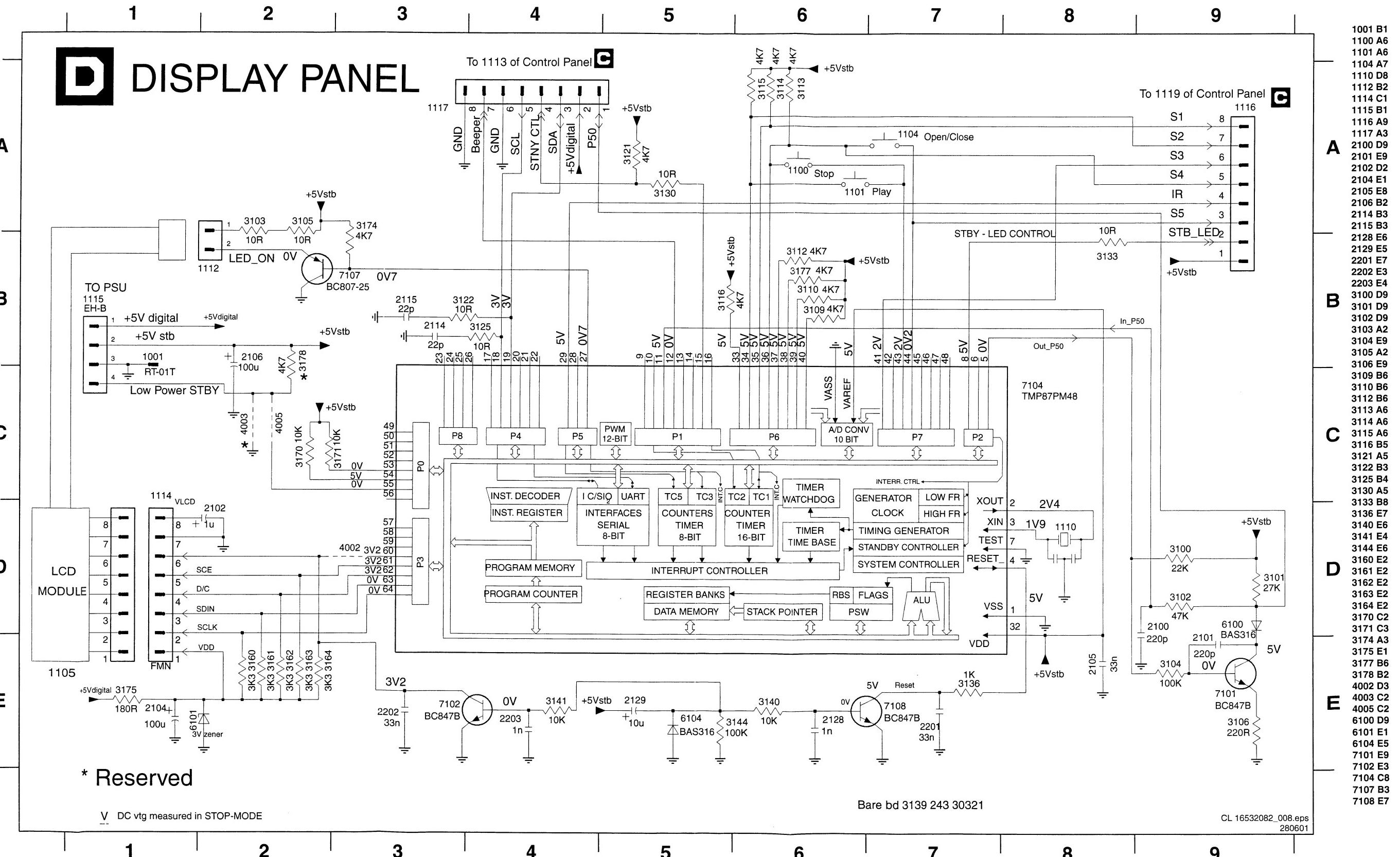
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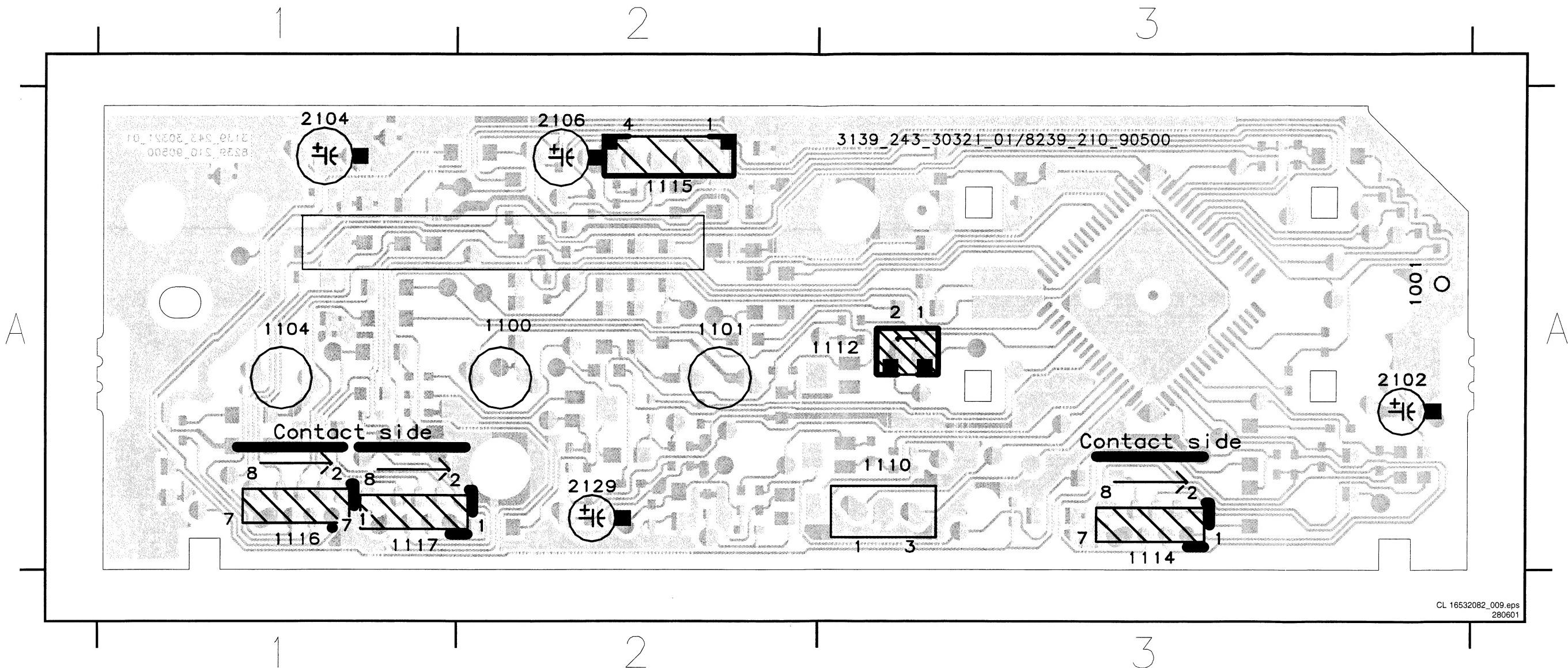
CL 16532082\_013.eps  
280601

## Display Board



**Layout Display Board (Top View)**

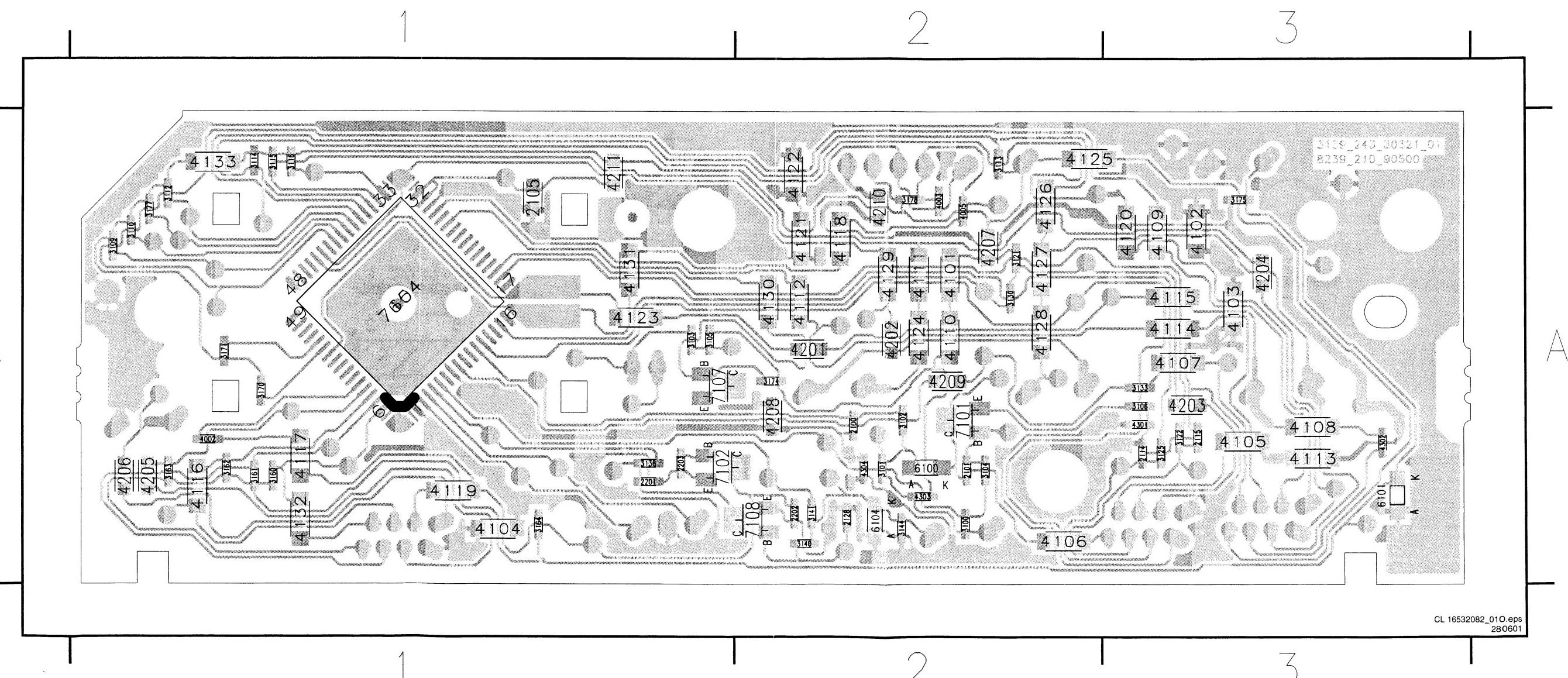
1001 A3    1101 A2    1110 A3    1114 A3    1116 A1    2102 A3    2106 A2  
1100 A2    1104 A1    1112 A3    1115 A2    1117 A1    2104 A1    2129 A2



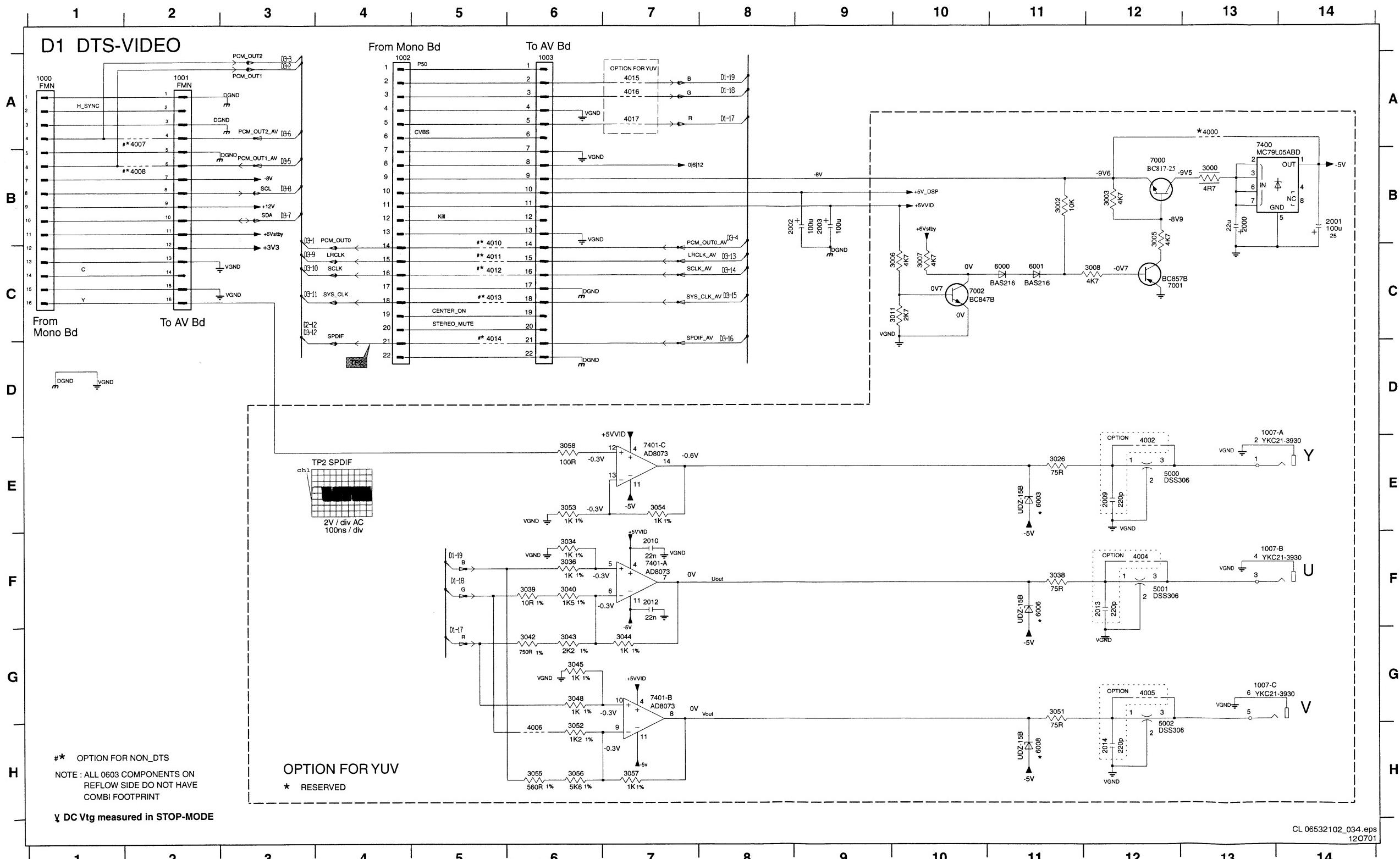
CL 16532082\_009.eps  
280601

**Layout Display Board (Bottom View)**

2100	A2	3102	A2	3116	A1	3161	A1	4003	A2	4110	A2	4121	A2	4132	A1	4210	A2	7104	A1
2101	A2	3103	A1	3121	A2	3162	A1	4005	A2	4111	A2	4122	A2	4133	A1	4211	A1	7107	A1
2105	A1	3104	A2	3122	A3	3163	A1	4101	A3	4112	A3	4123	A1	4201	A2	4301	A3	7108	A2
2114	A3	3105	A1	3125	A3	3164	A1	4102	A3	4113	A3	4124	A2	4202	A2	4302	A3		
2115	A3	3106	A3	3130	A3	3170	A1	4103	A3	4114	A3	4125	A2	4203	A3	4303	A2		
2128	A2	3109	A1	3133	A3	3171	A1	4104	A1	4115	A3	4126	A2	4204	A3	4304	A2		
2201	A1	3110	A1	3140	A2	3174	A2	4105	A3	4116	A1	4127	A2	4205	A1	43100	A2		
2202	A2	3112	A1	3141	A2	3175	A1	4106	A2	4117	A1	4128	A2	4206	A1	43101	A3		
2203	A1	3113	A2	3144	A2	3177	A1	4107	A3	4118	A2	4129	A2	4207	A2	43104	A2		
3100	A2	3114	A1	3144	A2	3178	A2	4108	A3	4119	A1	4130	A2	4208	A2	43101	A2		
3101	A2	3115	A1	3160	A1	4002	A1	4109	A3	4120	A3	4131	A1	4209	A2	43102	A1		

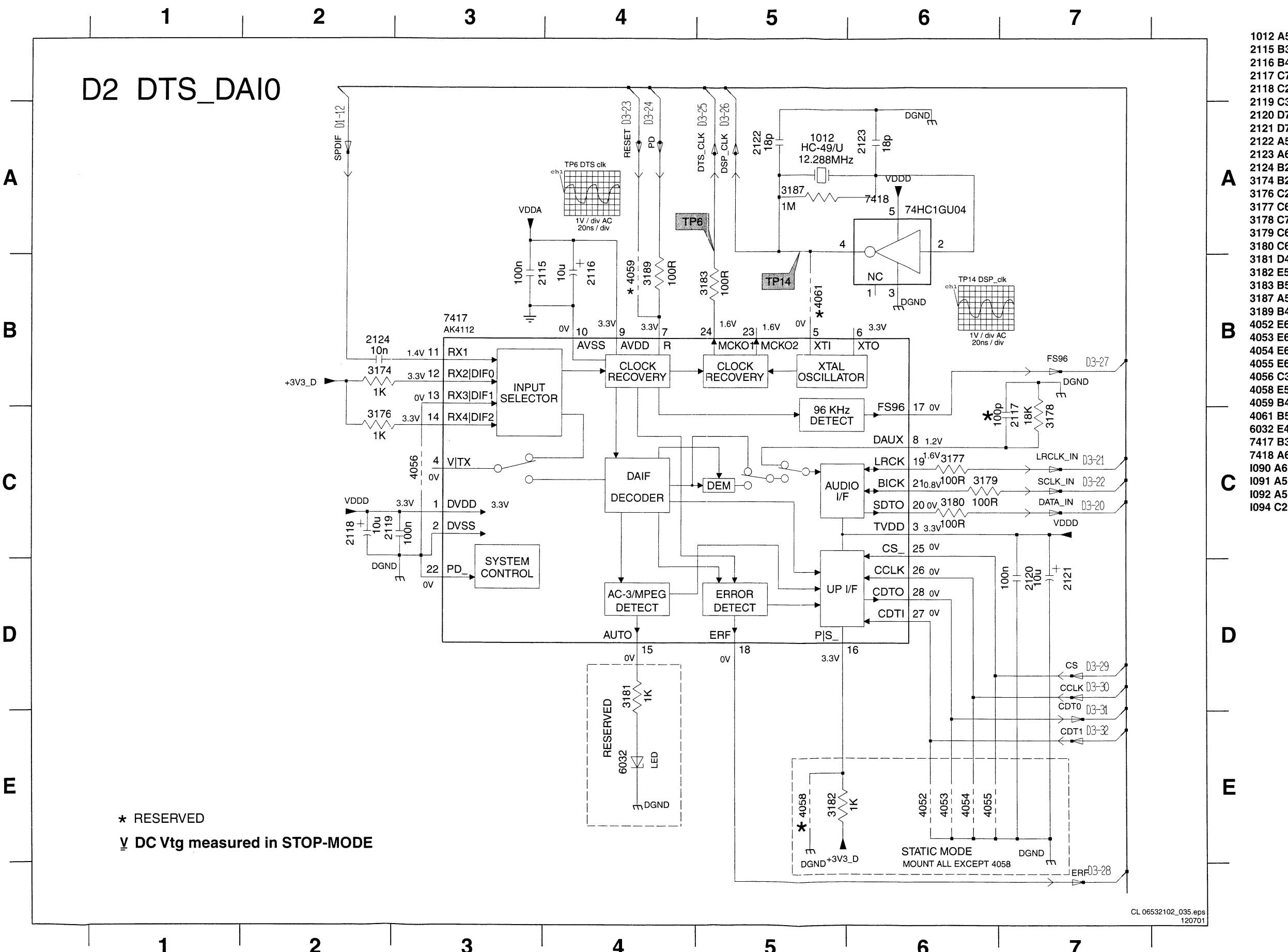


## DTS video



1000 A1	F030 B6
1001 A2	F031 B6
1002 A4	F032 B6
1003 A6	F033 B6
1007-A D13	F034 B5
1007-B F13	F035 B6
1007-C G13	F036 B6
2000 B13	F037 C6
2001 B14	F038 C6
2002 B8	F039 C6
2003 B9	F040 C6
2005 E12	F041 C5
2010 F7	F042 C5
2012 F7	F043 C6
2013 F12	F044 D6
2014 H12	F045 C5
3000 B13	I022 B14
3002 B11	I029 E13
3003 B12	I030 E13
3005 B12	I031 F13
3006 C10	I032 F13
3007 C10	I033 G13
3008 C12	I034 H13
3011 C10	I036 E11
3026 E11	I037 F11
3034 F6	I038 G11
3036 F6	I039 C9
3038 F11	I040 C10
3039 F6	I041 C11
3040 F6	I042 B12
3042 G6	
3043 G6	
3044 G7	
3045 G6	
3048 G6	
3051 G11	
3052 H6	
3053 E6	
3054 E7	
3055 H6	
3057 H7	
3058 E6	
4000 A13	
4002 E12	
4004 F12	
4005 G12	
4006 H6	
4007 A2	
4008 B2	
4010 C5	
4011 C5	
4012 C5	
4013 C5	
4014 D5	
4015 A7	
4016 A7	
4017 A7	
5000 E12	
5001 F12	
5002 H12	
6000 C11	
6001 C11	
6003 E11	
6006 F11	
6008 H11	
7000 B12	
7001 C12	
7002 C10	
7400 A13	
7401-A F7	
7401-B G7	
7401-C E7	
F000 A1	
F001 B1	
F003 A2	
F004 A2	
F005 A2	
F006 A2	
F007 A2	
F008 B2	
F009 B2	
F010 B2	
F011 B2	
F012 B2	
F013 B2	
F014 B2	
F015 C2	
F016 C2	
F017 C2	
F018 C2	
F019 B5	
F020 C5	
F021 C5	
F023 A5	
F024 A6	
F025 A6	
F026 A6	
F027 A6	
F028 A5	
F029 A6	

## DTS DA I/O



1012 A5  
 2115 B3  
 2116 B4  
 2117 C7  
 2118 C2  
 2119 C3  
 2120 D7  
 2121 D7  
 2122 A5  
 2123 A6  
 2124 B2  
 3174 B2  
 3176 C2  
 3177 C6  
 3178 C7  
 3179 C6  
 3180 C6  
 3181 D4  
 3182 E5  
 3183 B5  
 3187 A5  
 3189 B4  
 4052 E6  
 4053 E6  
 4054 E6  
 4055 E6  
 4056 C3  
 4058 E5  
 4059 B4  
 4061 B5  
 6032 E4  
 7417 B3  
 7418 A6  
 I090 A6  
 I091 A5  
 I092 A5  
 I094 C2

A

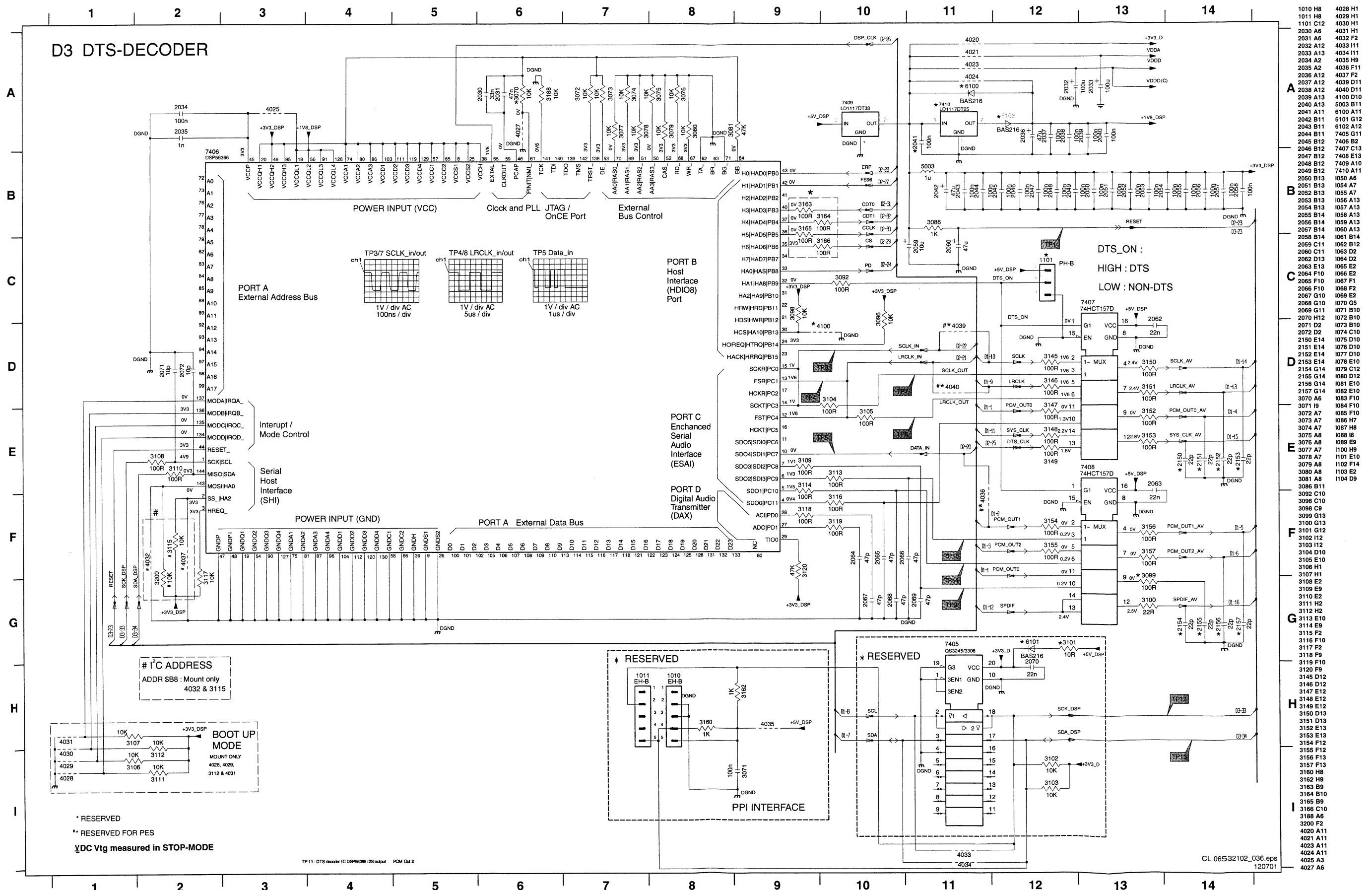
B

C

D

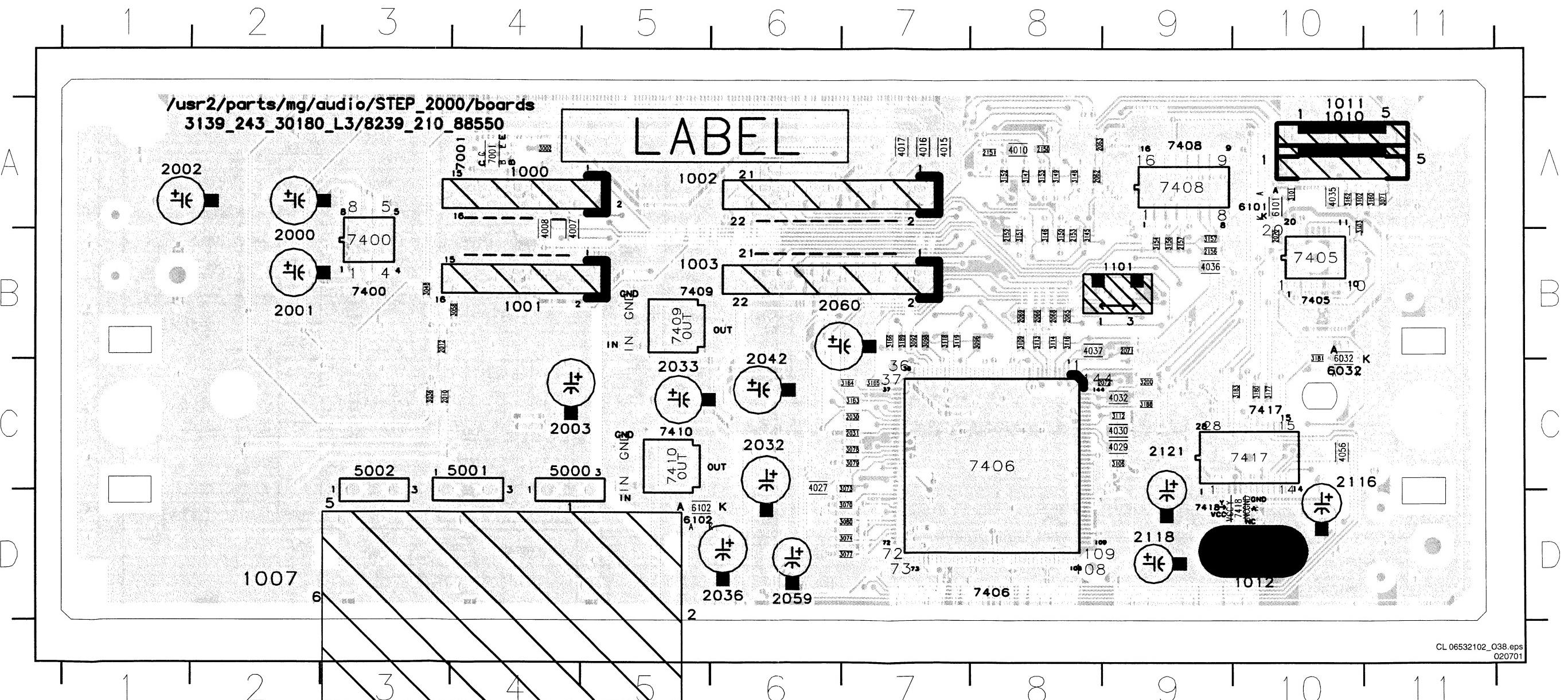
E

## DTS Decoder

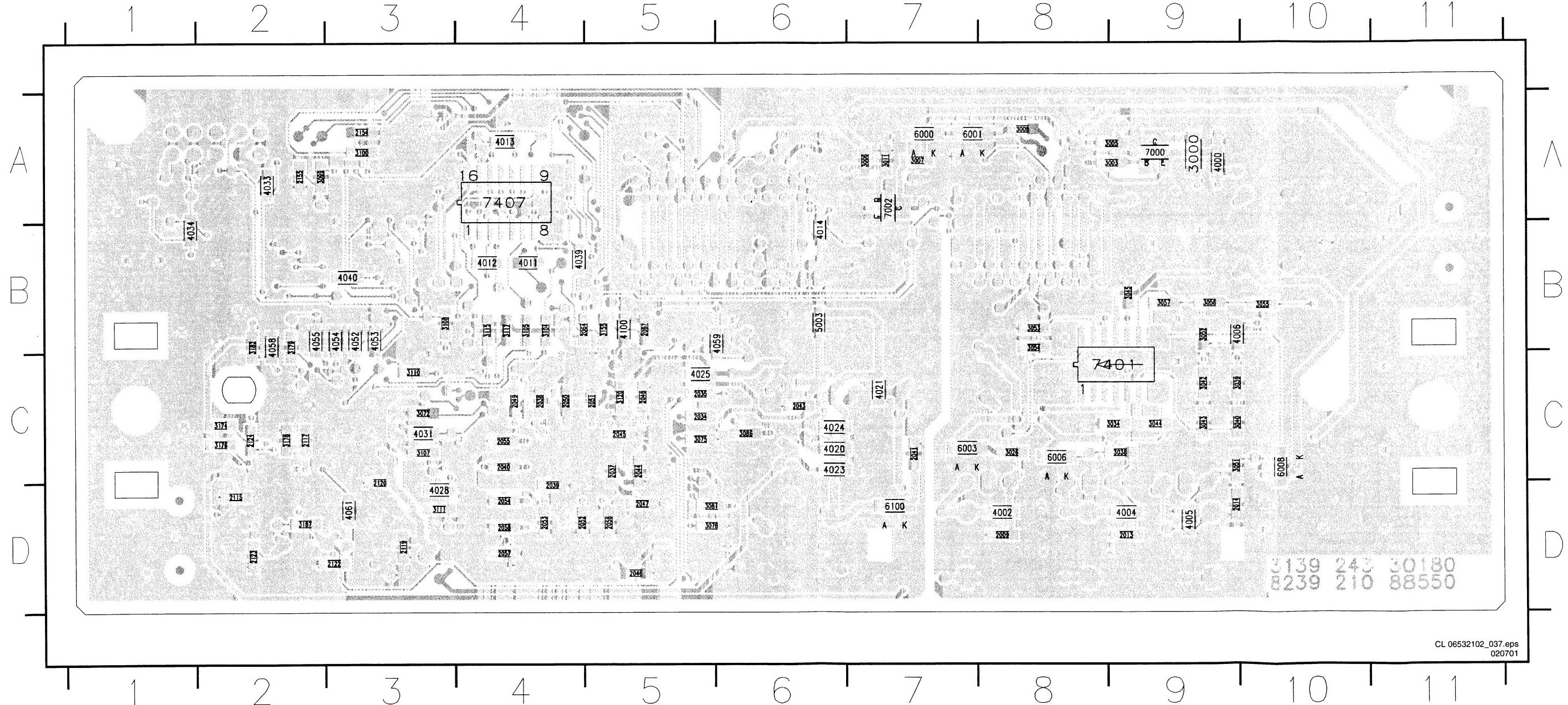


## Layout DTS Panel (Top View)

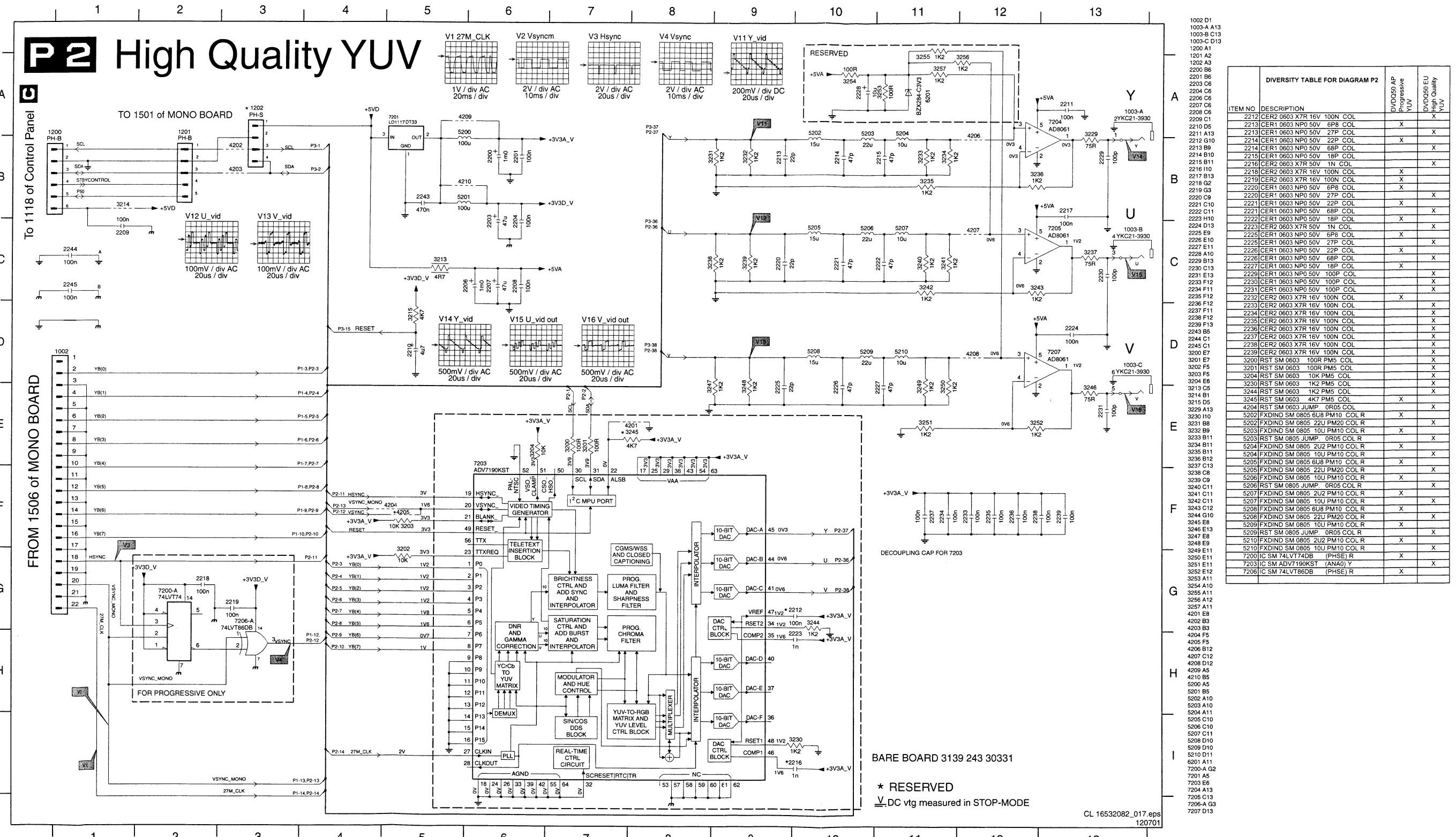
1000	A4	2002	A1	2060	B6	2118	D9	3058	B4	3098	B7	3119	B7	3156	B9	3183	C10	4029	C9	6101	A10
1001	B4	2003	C5	2062	A8	2121	C9	3070	D7	3101	A10	3145	B8	3188	C9	4030	C9	6102	D5		
1002	A6	2010	C3	2063	A8	2150	A8	3071	A11	3102	A10	3146	B8	3189	B7	4032	A4	7001	A4		
1003	B6	2012	B3	2064	B8	2151	B8	3073	C7	3103	A10	3147	A8	3200	C9	4035	A10	7400	B3		
1007	D4	2030	C7	2065	B8	2152	B8	3074	D7	3106	C9	3148	A8	4007	B4	4036	B9	7405	B10		
1010	A10	2031	C7	2066	B8	2153	B8	3077	D7	3109	C8	3149	A8	4008	B4	4037	B8	7406	C8		
1011	A10	2032	C6	2067	B8	2154	B8	3078	C7	3112	C8	3150	A8	4010	A8	4056	C10	7408	A9		
1012	D10	2033	C5	2068	B8	2155	B8	3079	C7	3113	C8	3151	A8	4015	A7	5000	D4	7409	B5		
1101	B9	2036	D6	2070	B9	2156	B8	3080	D7	3114	B8	3152	A8	4016	A7	5000	D4	7410	C5		
2000	A2	2042	B6	2072	C9	3002	A4	3092	B7	3116	B8	3153	A8	4017	A7	5002	D3	7417	C10		
2001	B2	2059	D6	2116	D10	3048	B3	3096	B8	3118	B7	3154	B9	3180	C10	4027	C6	6032	B10	7418	D10



## Layout DTS Panel (Bottom View)

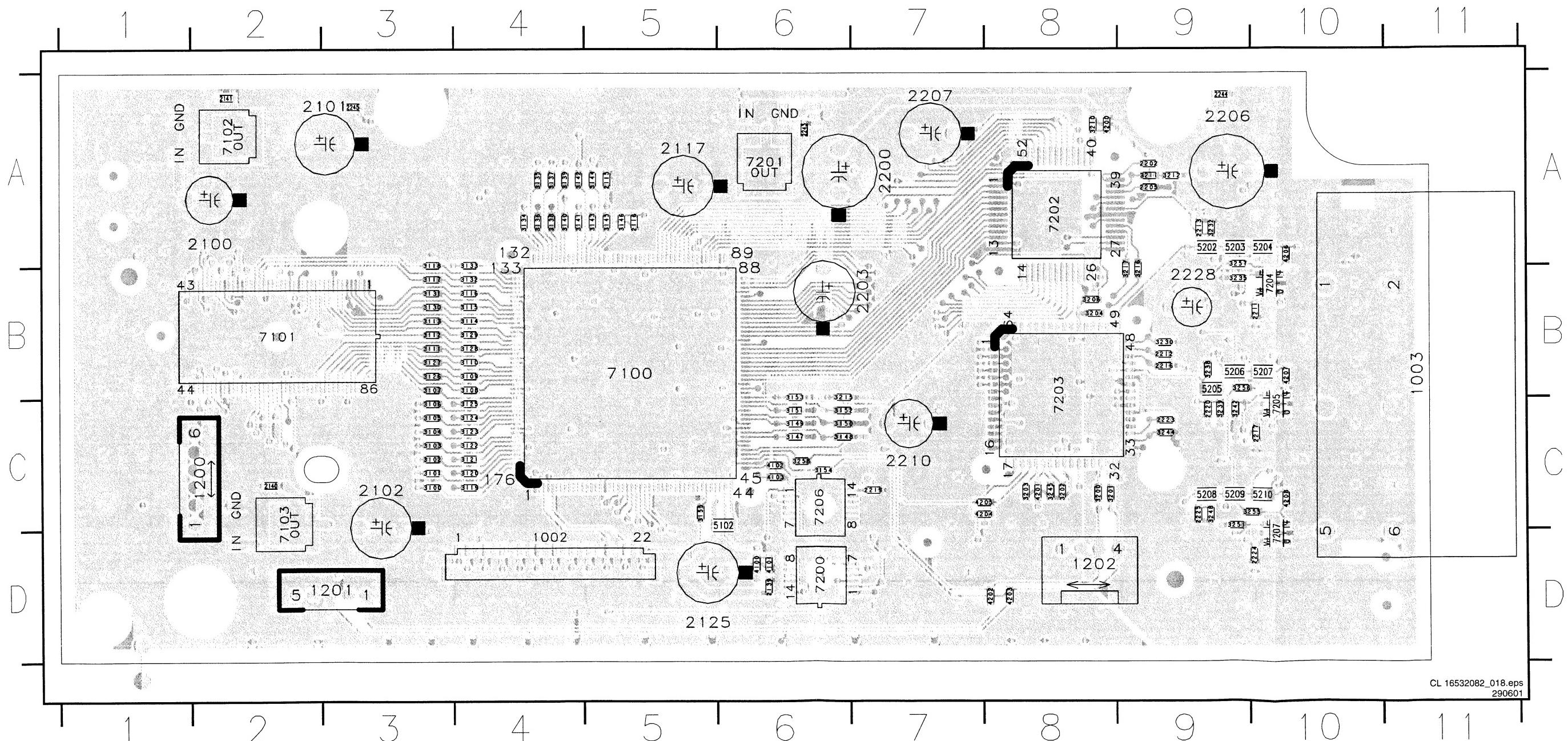


## High Quality YUV



## Layout High Quality YUV (Top View)

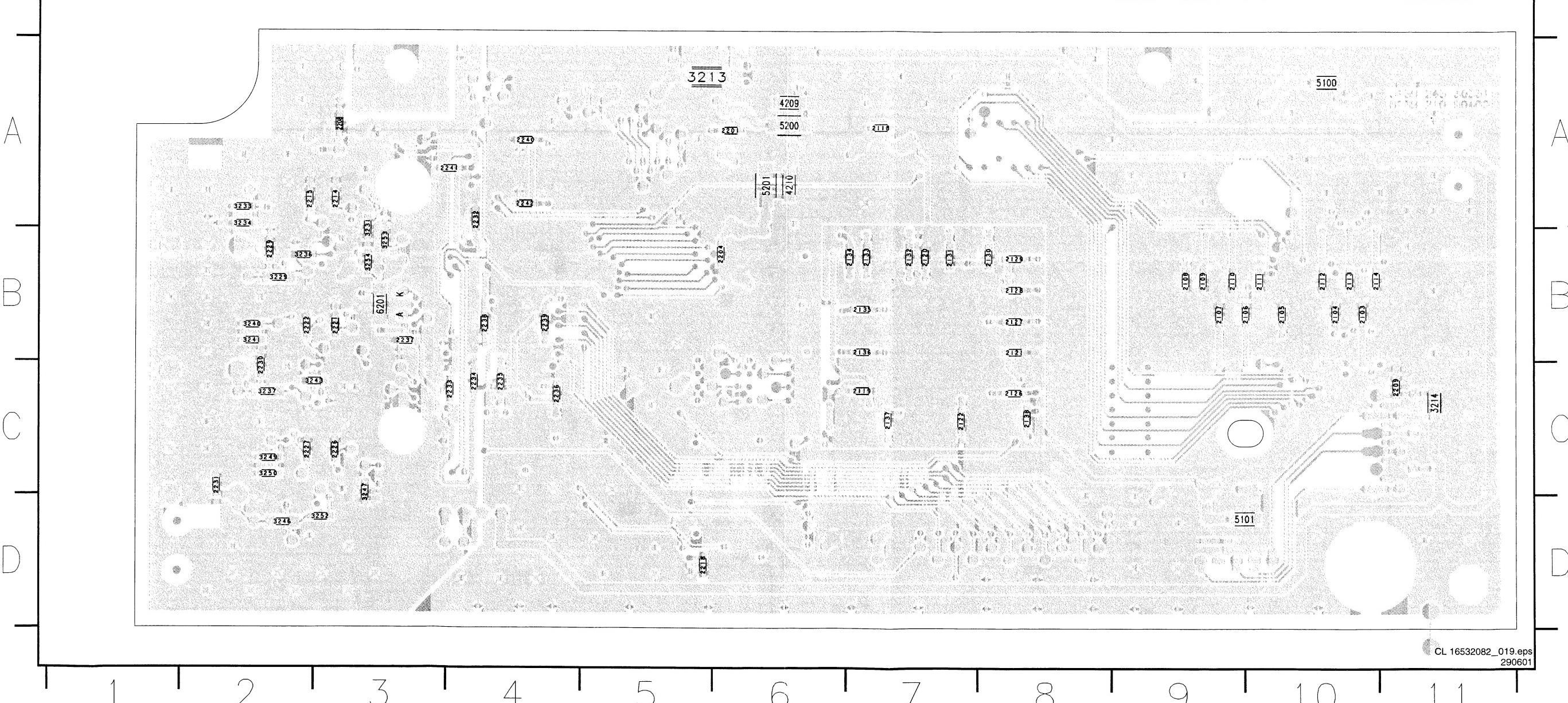
1002	D4	2141	A2	2220	C9	3106	C3	3120	C4	3134	A4	3148	C6	3210	C8	4204	5210	C10
1003	B11	2200	A7	2223	D10	3107	C4	3121	C4	3135	A4	3150	C4	3211	C9	4205	7100	C00
1200	C2	2202	A9	2224	D10	3108	C4	3122	C4	3136	A4	3151	C4	3212	C9	4206	7101	C22
1201	D3	2203	B7	2225	A4	3109	C4	3123	C4	3137	A4	3152	C4	3213	C9	4207	7102	C26
1202	A8	2205	A9	2226	A4	3110	C4	3124	C4	3138	A4	3153	C4	3214	C9	4208	7103	A66
1100	A9	2206	A7	2227	A4	3111	C3	3125	C4	3139	A4	3154	C4	3215	C9	4209	7200	A88
1101	A10	2207	C7	2228	A4	3112	C3	3126	C4	3140	A4	3155	C4	3216	C9	4210	7201	A10
1102	A11	2210	B10	2229	A4	3113	C3	3127	C4	3141	A4	3156	C4	3217	C9	4211	7202	A22
1115	A12	2211	B9	2230	A4	3114	C3	3128	C4	3142	A4	3157	C4	3218	C9	4212	7203	A26
1116	A13	2212	B9	2231	A4	3115	C3	3129	C4	3143	A5	3158	C4	3219	C9	4213	7204	A56
1117	A14	2213	A9	2232	A4	3116	C3	3130	C4	3144	A5	3159	C4	3220	C9	4214	7205	A88
125	D5	2216	B9	2233	A4	3117	C3	3131	C4	3145	A5	3160	C4	3221	C9	4215	7206	D10
139	D6	2217	C10	2234	A4	3118	A3	3132	A4	3146	A5	3161	C4	3222	C9	4216	7207	C10
2140	C2	2219	C7	2235	A4	3119	C4	3133	A4	3147	C6	3162	C4	3223	C9	5208	5209	C99



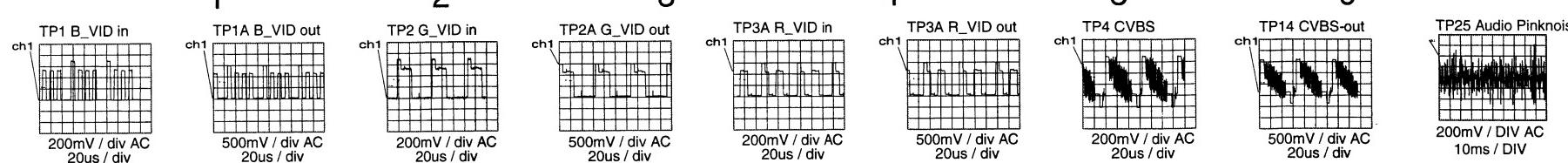
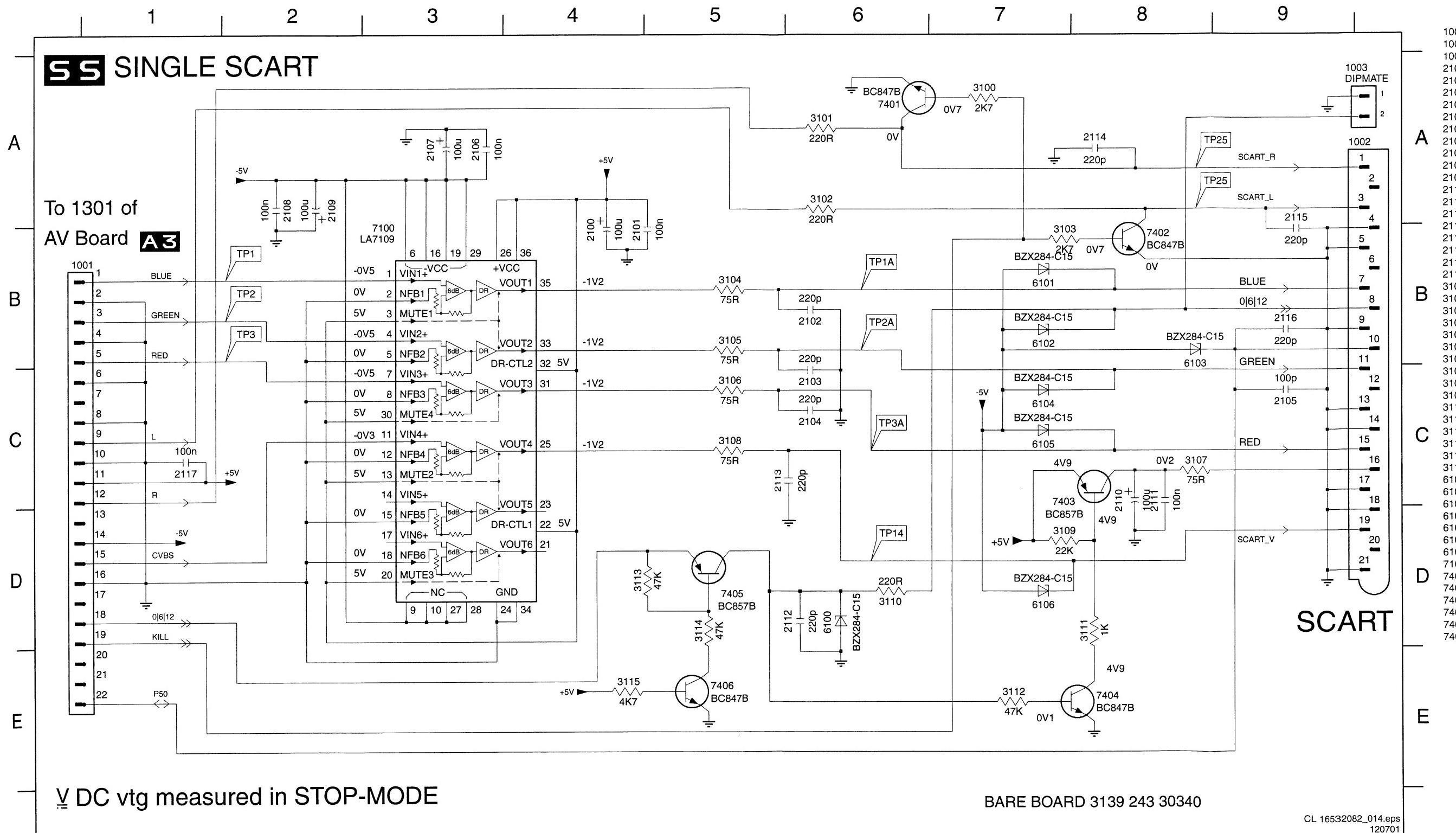
**Layout High Quality YUV (Bottom View)**

2103	B10	2111	B10	2122	C7	2133	B7	2208	A3	2227	C2	2236	C4	3214	C11	3241	B2	3254	B3
2104	B10	2112	B10	2126	C8	2134	B7	2209	C11	2229	C2	2237	B3	3229	B2	3243	C3	4209	A6
2105	B100	2113	B10	2127	C8	2135	B7	2214	A3	2230	C2	2238	B4	3231	B3	3246	D2	4210	A6
2106	B100	2114	B10	2128	C8	2136	B7	2215	A2	2231	C2	2239	B4	3233	A2	3247	C2	5100	A10
2107	B100	2118	A7	2129	C8	2137	C7	2218	D5	2232	A4	2240	A4	3234	A2	3249	C2	5101	D9
2108	B100	2119	C7	2130	C8	2138	C8	2221	B3	2233	C4	2241	A4	3236	B2	3250	C2	5200	A6
2109	B100	2120	B7	2131	B7	2201	A6	2222	B2	2234	C4	2242	A4	3237	C2	3252	D3	5201	A6
2110	B9	2121	B8	2132	B7	2204	B6	2226	C3	2235	C4	3213	A5	3240	B2	3253	B3	6201	B3

1 2 3 4 5 6 7 8 9 10 11



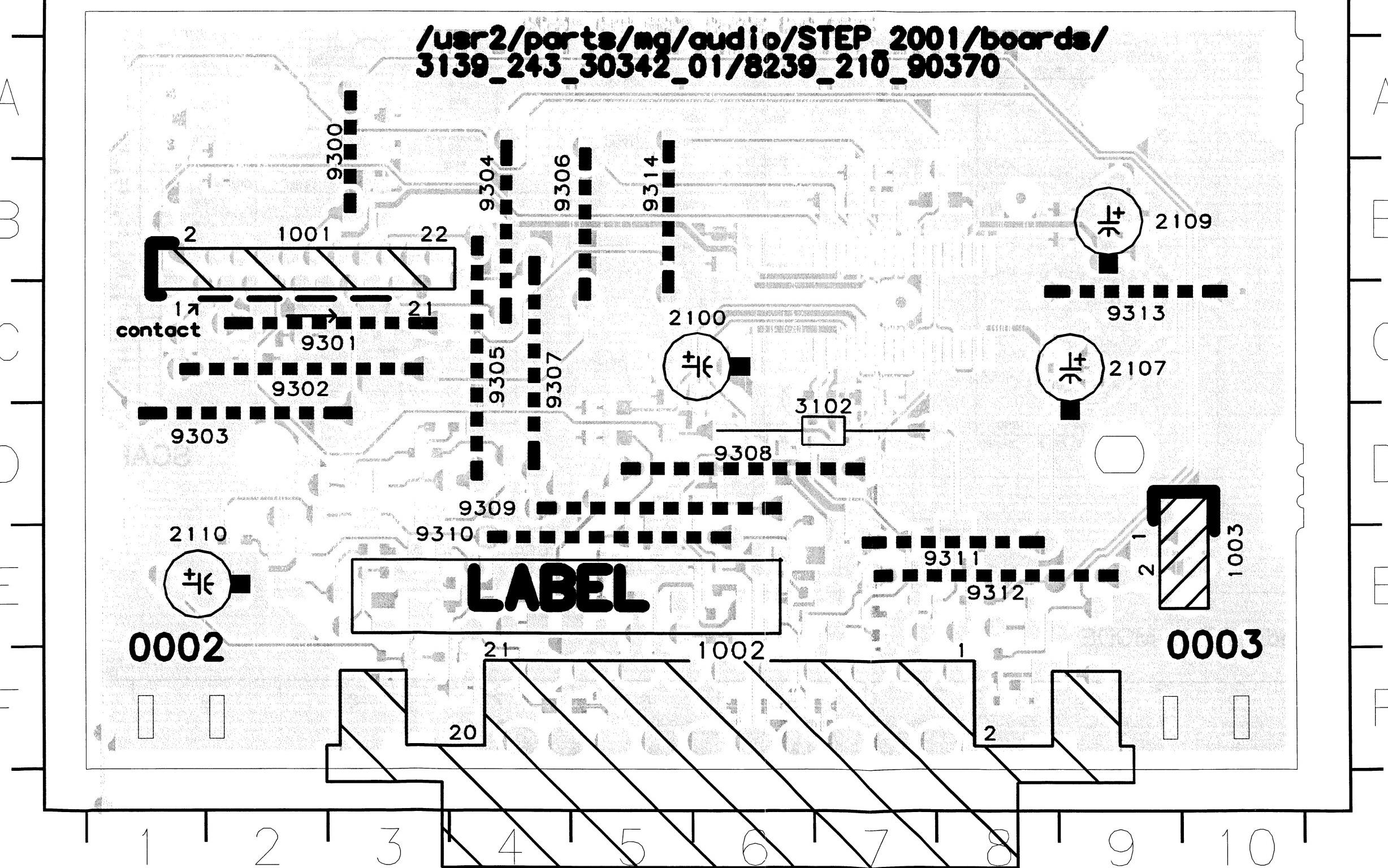
## Single SCART



**Layout SCART Board (Top View)**

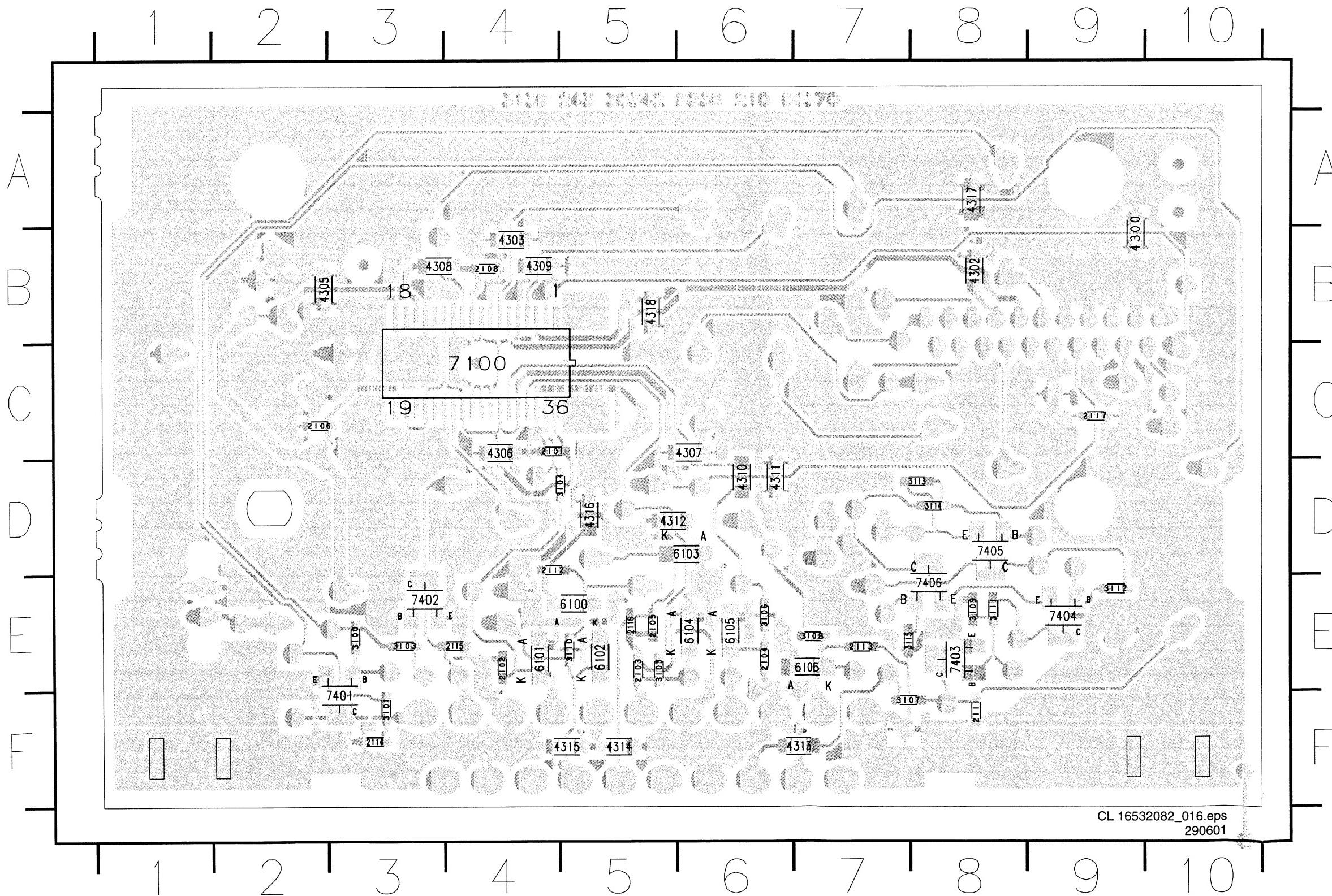
1001	B2	2107	C9	9300	A3	9304	B4	9308	D6	9312	E8
1002	F6	2109	B10	9301	C3	9305	C4	9309	D4	9313	C95
1003	E10	2110	E1	9302	C2	9306	B4	9310	E8	9314	B5
2100	C6	3102	D7	9303	D1	9307	C4	9311			

1      2      3      4      5      6      7      8      9      10



## **Layout SCART Board (Bottom View)**

2101	C4	21112	D4	3103	E3	31111	E8	4305	B2	4313	F7	6102	E5	7403
2102	E4	21113	E7	3104	D5	31112	E9	4306	C4	4314	F5	6103	D6	7404
2103	E5	21114	E3	3105	E5	31113	D8	4307	C6	4315	F5	6104	E7	7405
2104	E6	21115	E4	3106	F7	31114	E7	4308	B3	4316	D5	6105	E7	7406
2105	E5	21116	E5	3107	E7	31115	B9	4309	B4	4317	A8	6106	C4	7408
2106	C2	21117	E3	3108	E7	4300	B8	4310	D6	4318	B5	7100	F3	7409
2108	B4	3100	E3	3109	E8	4302	B9	4311	D6	6100	E4	7401	E3	7408
2111	F8	3101	F3	3110	E5	4303	B4	4312	D5	6101	7402	E3		



## ***Personal Notes:***

## ***Personal Notes:***

## 8. Alignments

No electrical alignments available

## 9. Circuit Descriptions and List of Abbreviations

### 9.1 Index

- 9.1.1 Index
- 9.1.2 Introduction
- 9.1.3 Power Supply
- 9.1.4 Loader/Monoboard
- 9.1.5 Data Processing
- 9.1.6 Control and Display
- 9.1.7 Abbreviations

**Notes:**

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

### 9.2 Introduction

#### 9.2.1 Features

The Step2001 range is a 3rd generation DVD player. It contains many new features, such as:

- MP3 playability,
- Digital Crystal Clear,
- DTS decoding,
- Progressive/High Quality YUV,
- Component video out,
- Smart picture,
- Zoom + perfect still,
- Disc lock,
- 5 Disc resume,
- CD-RW compatible.

#### 9.2.2 Differences

The Step2001 has, compared to its predecessor the Step2000, a new DVD module called the SD3.x.

The main difference between the SD1/2 and the SD3 is the new main DVD processor (Sti5508/STi5580), which has enhanced audio features like MP3, colour setting, NTSC/PAL conversion and DTS decoder (only for STi5580).

All A/V functional requirements are the same as for the DVD 2B except for:

- no YUV matrix, colour setting IC, Karaoke IC and headphone,
- a new audio DAC, SCART board and Progressive Scan board,
- a re-used A/V board (however some models have a new Front Audio DAC).

All display functional requirements are the same as the DVD 2B except for:

- a new LCD display.

#### 9.2.3 Modules

The main modules are:

- Power Supply Unit (PSU).
- SD3.x DVD module (Loader VAL6011 + Monoboard).

- Digital Theatre Sound (DTS) Board (only for SD3.0 with host processor Sti5508).
- Audio Video / (A/V) Board.
- Display/Control Board.
- SCART Board (only for Europe).
- Progressive Scan Board (only for Q50).

**Note:**

There are two different SD3.x executions:

- SD3.0 refers to DVD module with host processor Sti5508 and
- SD3.1 refers to DVD module with host processor Sti5580.

#### 9.2.4 Service

This SD3.x has the same ComPair connector as in all previous DVD generations.

Flashing of the application SW is now possible with the ComPair cable and a CDR disc (except for sets with Mask-ROM software).

### 9.3 Power Supply

**Note:** There are two different Power Supply modules used, due to different suppliers (Billion or EPM). The 'Billion' module is used in AP and USA players, while the 'EPM' module is used for the other regions.

Both modules are described separately.

#### 9.3.1 'Billion' Power Supply Module (3139 248 70351)

**Introduction**

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC UC3842 to produce pulses to drive the power 'switch' (MOSFET). The regulation of the 'duty cycle', controls the supply output, at a fixed switching frequency (approximately 58 kHz, determined by the RC timing components at pin 4).

The UC3842 (item IC1) is a high performance, fixed frequency, current mode controller for DC-to-DC converter applications. This integrated circuit features:

- a trimmed oscillator for precise duty cycle control,
- a temperature compensated reference,
- a high gain error amplifier,
- a current sensing comparator and
- a high current totem pole output ideally suited for driving a power MOSFET (item Q1).

Also included are protective features consisting of input and reference under-voltage lockouts each with hysteresis, cycle by cycle current limiting, programmable output dead time and a latch for single pulse metering.

**Output Voltages**

- +12V\_standby (present during standby).
- +5V\_standby (present during standby).
- +5V\_digital (will switch off via Q3 during Standby).
- +5V\_AV (will switch off via Q3 during Standby).
- 3V3 (present during standby).
- -5V (will switch off during standby).

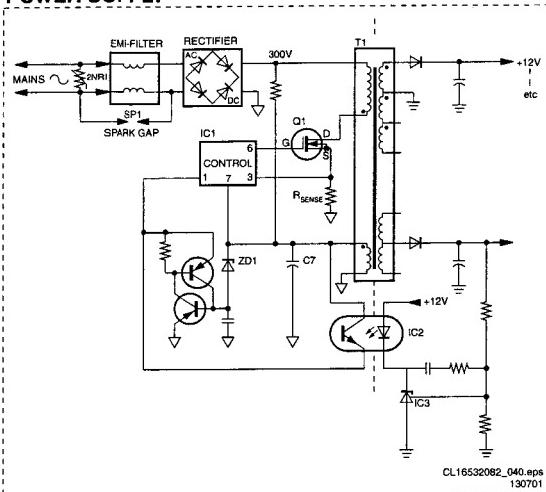
**Operation****POWER SUPPLY**

Figure 9-1

**Mains Input Circuit**

The bridge rectifier (D1-D4) rectifies the mains voltage, after which C5 smoothens this voltage. The DC voltage across this capacitor is the DC input voltage (approximately 300 V), to pin 1 of transformer T1.

The mains input also consists of a (differential mode) lightning protection ZNR1 and a (common mode) lightning protection SP1 (spark gap).

**Start-up and Take-over Circuitry**

With the mains voltage input, C7 will charge. When this voltage (at pin 7 of IC1), reaches the start-up threshold of min. 14.5V, the control circuit starts to operate.

After start-up, IC1 requires a sinking current, which the start-up circuitry cannot deliver. Therefor a take-over circuitry (a coupled winding of transformer T1) is present. The voltage at this point will take over the supply voltage at pin 7 of the IC. If the take-over circuit does not function, the IC will switch off again at the minimal operating voltage of 8.5 V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

**Secondary Voltage Sensing**

The secondary voltage regulating circuit comprises of opto-coupler IC2 (which isolates the error signal from the control IC on the primary side), and a reference component IC3 (TL431).

The reference component has two functions:

- a very stable and accurate reference diode
- a high gain amplifier.

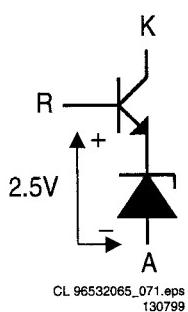


Figure 9-2

When the output voltage increases (due to a reduction in the load), the voltage across R23 increases to above the internal reference voltage of 2.5 V. IC3 will conduct and the current

through the opto-coupler will increase. This results in an increase of the voltage at pin 2 of IC1, which will reduce the on time of FET Q1.

In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

**Primary Current Sensing**

The current through FET Q1, will result in a voltage drop across R3A ( $R_{SENSE}$ ). This line goes to pin 3 of IC1, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

**Under-voltage Protection**

Two under-voltage lockout comparators are incorporated, to guarantee that IC1 is fully functional before the output stage is enabled. Separate comparators with built-in hysteresis, monitor both the supply voltage at pin 7 and the reference voltage at pin 8.

If the supply voltage at pin 7 drops below 10 V (typical) e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 6 is disabled and the controller will switch 'off'.

**Over-voltage Protection**

The over-voltage circuitry (ZD1, Q7, and Q8) is used to detect an over-voltage situation on the secondary side of the transformer.

If, after start-up, the voltage at the zenerdiode ZD1 will exceed its zener voltage, the internal latch circuit is triggered (via pin 1), the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.

**Note:** If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

**9.3.2 'EPM' Power Supply Module (3122 427 22930 or 22930)****Introduction**

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC TY720xx to produce pulses to drive the power 'switch' (MOSFET). The TY720xx (item 7101) is a high performance, current mode controller for DC-to-DC converter applications.

The operation frequency varies with the circuit load. When the output power demand decreases, the switching frequency raises, with a maximum frequency of 125 kHz (determined by C2107 at pin 5). At this point, the internal VCO takes over and starts to decrease the switching frequency.

This has some benefits compared to a 'fixed frequency' flyback converter. The efficiency is better, which results in a lower power consumption.

**Note:** See diagram in chapter 7.

**Output Voltages**

- +12V\_standby (present during standby).
- +5V\_standby (present during standby).
- +5V\_digital (will switch off via TS7221 during Standby).
- +5V\_AV (will switch off via TS7221 during Standby).
- 3V3 (present during standby).
- -5V (will switch off during standby).

**Operation****Mains Input Circuit**

The bridge rectifier (D6112-D6115) rectifies the mains voltage, after which C2121 smoothens it. The DC voltage across this capacitor is the DC input voltage (approximately 300V), to pin 2 of transformer T5131 and IC7101.

The mains input also consists of a (differential mode) lightning protection R3120 and a (common mode) lightning protection 1121/1122 (spark gap).

#### *Start-up Circuitry*

The rectified voltage from the bridge rectifier is connected to pin 1 via R3116. This voltage will charge the  $V_{CC}$  capacitor (C2102). When this voltage, (at pin 13 of 7101), reaches the start-up threshold of min 15 V, the control circuit starts to operate.

After start-up, IC 7101 requires a sinking current, which the start-up circuitry cannot deliver. Therefor a take-over circuitry (a coupled winding of transformer L5131) is present. The voltage at this point will take over the supply voltage at pin 13 of the IC.

If the take-over circuit does not function, the IC will switch off again at the minimal operating voltage of +8 V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

#### *Secondary Voltage Sensing*

The secondary voltage regulating circuit comprises of opto-coupler 7102 (which isolates the error signal from the control IC on the primary side), and a reference component 7201 (TL431).

The reference component has two functions:

- a very stable and accurate reference diode
- a high gain amplifier.

When the output voltage increases (due to a reduction in the load), the voltage across R3205+R3206 increases to above the internal reference voltage of 2.5 V. Item 7201 will conduct and the current through the opto-coupler will increase. This results in an increase of the voltage at pin 4 of 7101, which will reduce the on time of FET 7125. In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

#### *Primary Current Sensing*

The current through FET 7125, will result in a voltage drop across R3126/27/28 ( $R_{SENSE}$ ). This line goes to pin 11 of 7101, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

#### *Under-voltage Protection*

If the supply voltage at pin 13 drops below 7.2 V (typical), e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 6 is disabled and the controller will switch off.

#### *Over-voltage Protection*

An internal over-voltage protection circuitry continuously monitors the  $V_{CC}$  pin.

If, after start-up, this voltage exceeds 40 V, the internal latch circuit is triggered, the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.

**Note:** If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

## 9.4 Loader/Monoboard

### SD3.0 LOADER ASSY

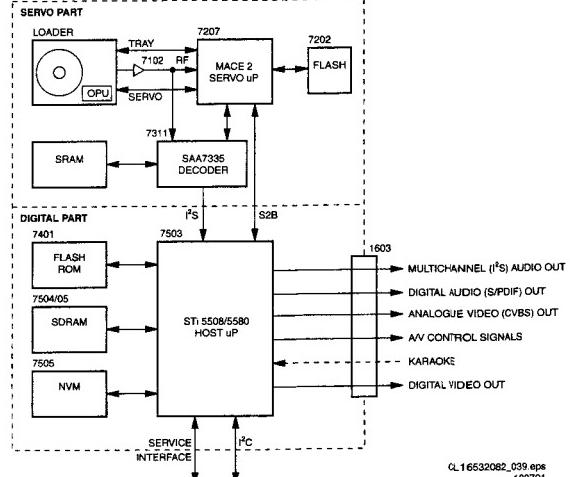


Figure 9-3

#### 9.4.1 The Servo Part

##### *The Optical Unit*

The optical unit consists of two lasers, one for CD with a wavelength of 780 nm, and one for DVD with a wavelength of 650 nm. The TZA1033 (item 7102) controls the data from these lasers, and the supply to them.

##### *The Signal Processor TZA1033*

The TZA1033 (or DVDALAS2) is an analogue pre-processor and laser supply circuit. It contains data amplifiers and several options for radial tracking and focus control.

It is possible to optimise the dynamic range of this pre-amp/processor combination for the LF servo and RF data paths. The gain in both channels is separately programmable. This will guarantee an optimal playability for all kinds of discs. Also a dual laser supply is implemented, with fully automatic laser control including stabilisation and an ON/OFF switch, plus a separate supply pin for power efficiency.

The servo signals go to the MACE2 servo processor, while the HF output signal, goes to the SAA7335 decoder (item 7311).

##### *The Decoder SAA7335*

The SAA7335 (item 7311) is a high-end combined Compact Disc (CD) and Digital Versatile Disc (DVD) compatible decoding device. The device operates with an external 32 kB SRAM for DVD error correction and de-interleaving operations.

This IC decodes EFM or EFM+HF signals directly from the laser pre-amplifier, including analogue front-end, PLL data recovery, demodulation and error correction.

The analogue front-end input converts the HF input to the digital domain via an 8-bit ADC, proceeded by an AGC circuit to obtain the optimum performance from the converter. An external resonator clocks this block. This subsystem recovers the data from the channel stream. It corrects asymmetry, performs noise filtering and equalisation and finally recovers the bit clock and data from the channel using a digital PLL.

The demodulator part detects the frame synchronisation signals and decodes the EFM (14 bit) and EFM+ (16 bit) data and sub-code words into 8 bit symbols. Via the serial output interface, the I<sup>2</sup>S data (audio and video) go to the DVD decoder STI5508.

The spindle-motor interface provides both motor control signals from the demodulator and, in addition, contains a tachometer loop that accepts tachometer pulses from the motor unit. They drive the motor IC (item 7304).

The SAA7335 has two independent microcontroller interfaces. The first is a serial I<sup>2</sup>C-bus and the second is a standard 8-bit multiplexed parallel interface. Both of these interfaces provide access to a total of 32 8-bit registers for control and status.

#### **The Servo Processor MACE2**

The servo circuit in the MACE2 IC (item 7207), takes care of the servo controls. In a CD system, there are some 12 control loops active. About six of them are needed to adjust the servo error signals, that is once per disc rotation. It also adjusts offsets, signal amplitudes and loop gains (AGCs), to enlarge system robustness and to avoid expensive potentiometer adjustments in production.

The other six loops determine the laser spot position on the disc in the radial, axial (focus) and tangential directions. It also has to take care that the spot accesses a required position as fast as possible. This access system consists of two parts, namely the actuator and the sled, which are (within a certain range) mechanically and electrically independent. So during an access, the servo has to control as well the actuator as the sled.

The analogue signals from the diode pre-processor are converted into a digital representation using A/D converters. For the communication between the host processor (Sti5508) and the servo processor the S2B bus is used, this supports full-duplex asynchronous communication.

**Note:** For an extensive description of the MACE2 IC, see Service Manual 3122 785 11010.

#### **9.4.2 The Digital Part**

##### **The Host Processor Sti5508/Sti5580**

The Sti5508/Sti5580 host processor is the successor of the Sti5505. It works on 2.5 V and 3.3 V. The Sti5580 is the high-end version with DTS and DVD-audio capability. It comprises the following functions:

- video decoder which supports MPEG1 and MPEG2
- audio decoder which supports AC-3, MPEG1, MPEG2, PCM, DTS, DVD-audio, 6-channel, virtual surround
- PAL/NTSC video encoder with simultaneously Y/C, CVBS and RGB/YUV outputs
- PAL to NTSC and NTSC to PAL conversion
- the video encoder supports Closed Captioning (CC) and MacroVision 7
- full screen On Screen Display (OSD) generator
- on-chip PLLs to generate all necessary clocks (as reference the 27 MHz video clock is used). This is only available from STi5508 cut 2.0 and above.

##### **Input**

Input data comes from the I<sup>2</sup>S-bus. The front-end interface of this device, accepts DVD, CD and CD-DA information.

##### **Signal Processing**

For video, the input data stream is decoded to the appropriate MPEG, Sub Picture and OSD data streams, after which they are fed to the PAL/NTSC encoder. This cell will convert the digital MPEG/Sub Picture/OSD stream into a standard base band signal and into RGB components. It handles interlaced and non-interlaced data, can perform CC/TXT encoding and allows MacroVision copy protection.

For audio, the processing cell is a fully compatible Dolby AC-3, MPEG1, MPEG2, PCM, DTS and DVD-audio decoder, capable of decoding 5.1 and 2 channel streams.

**Note:** DTS and DVD-audio are only available with Sti5580.

##### **Output**

For video, six analogue output pins are available on which CVBS, S-VHS (Y/C) and RGB/YUV signals are present. They go directly to the A/V board.

For audio, the Sti5508 has 3 PCM digital outputs (for 6-channel analogue audio):

- PCM\_OUT0: left + right (on pin 14 of connector 1603).
- PCM\_OUT1: Centre and LFE (on pin 6 of connector 1604).
- PCM\_OUT2: left and right surround (on pin 4 of connector 1604).

Sampling frequencies of 96 kHz, 48 kHz, 44.1 kHz and 32 kHz are supported, and a down sampling filter (96 kHz/48 kHz) is available.

The I<sup>2</sup>S audio outputs of the Sti5508 go directly to the D/A converters (items 7500, 7502 and 7504) on the A/V board.

##### **De-emphasis**

In the 3rd generation player, the de-emphasis is done in the host processor (so not in the DACs on the A/V board). So there are no longer control lines foreseen to the A/V board. Therefore the 3rd generation mono board is not compatible with the first generation A/V board.

##### **Memory**

###### **SDRAM**

The size of the SDRAM is 2 times 16 Mb or 1 time 64 Mb (not simultaneously).

The SDRAM (items 7504 and 7505) has the following functions:

- it is used by the MPEG video decoder as a frame buffer
- it holds the software and the variables used by it.

##### **Flash-ROM**

A 2 Mb Flash-ROM (item 7401) holds the DVD firmware, and is controlled by pin 189 (FLASH\_OEN) of the Sti5508/5580. It must be able to perform a download (by disk or DCU-link) in a Flash only system.

##### **EEPROM**

User settings, player settings and region code are stored in a 32 Kb I<sup>2</sup>C EEPROM. For high-end applications a 64 Kb version is used, which is pin compatible.

## **9.5 Data Processing**

### **9.5.1 Digital Theatre Sound (DTS) Board (If Present)**

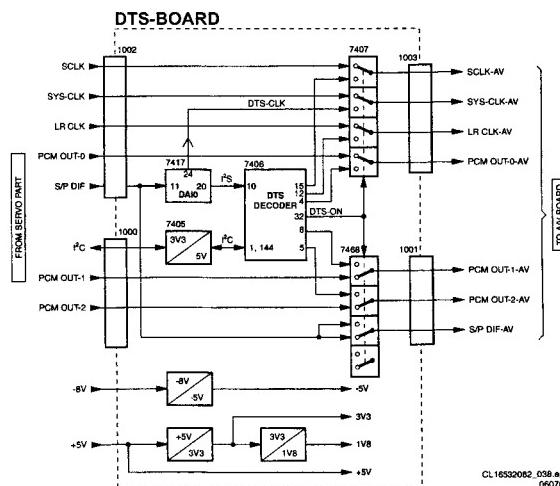


Figure 9-4

Some player models are DTS compatible. The DTS panel is then inserted between the Monoboard and the A/V board. You can split it up in three parts, which each are explained below.

#### Digital Video

The video data is not processed on this board, it goes directly to the A/V board.

#### Digital Audio Input Output (DAIO)

The AK4112A is a digital audio receiver (DIR) compatible with 96kHz, 24bits. It can automatically detect a Non-PCM bit

stream. This IC decodes the SPDIF signal to an I<sup>2</sup>S data stream. The output goes to the DTS decoder.

#### DTS Decoder

The DSP56366 (item 7406) is a Digital Signal Processor, used here as DTS decoder.

When the input data carries DTS information, the DTS\_ON signal switches to high, and this will activate the two multiplex ICs 7407 and 7408. Now this data goes to the A/V board. In case it carries no DTS information, the PCM data from the Monoboard goes to the A/V board.

Output of the DTS decoder is an I<sup>2</sup>S data stream, which is present at the Enhanced Serial Audio Interface (ESAI) pins.

### 9.5.2 Audio/Video (A/V) and SCART Board

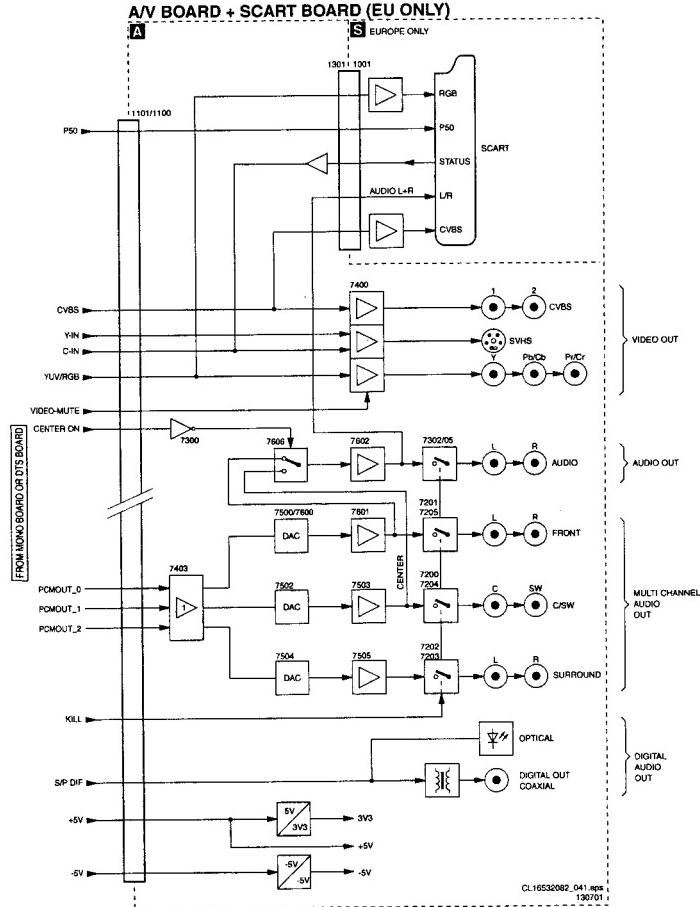


Figure 9-5

This board is the interface panel between the DVD-player and its peripherals.

#### Video

The analogue video signals from the Monoboard are fed to video buffer LA7109 (item 7400), and for Europe they also go to the SCART board (double SCART for DVD952). After amplification, they go directly to the VIDEO OUT cinch connectors.

#### Audio

The digital audio signals are fed to a buffer IC (7403, which is optional), followed by D/A converters. The KILL signal, coming from the host processor Sti5508/Sti5580, mutes the audio outputs during STOP, NEXT and PREVIOUS commands.

## 9.5.3 Progressive Scan Board (If Present)

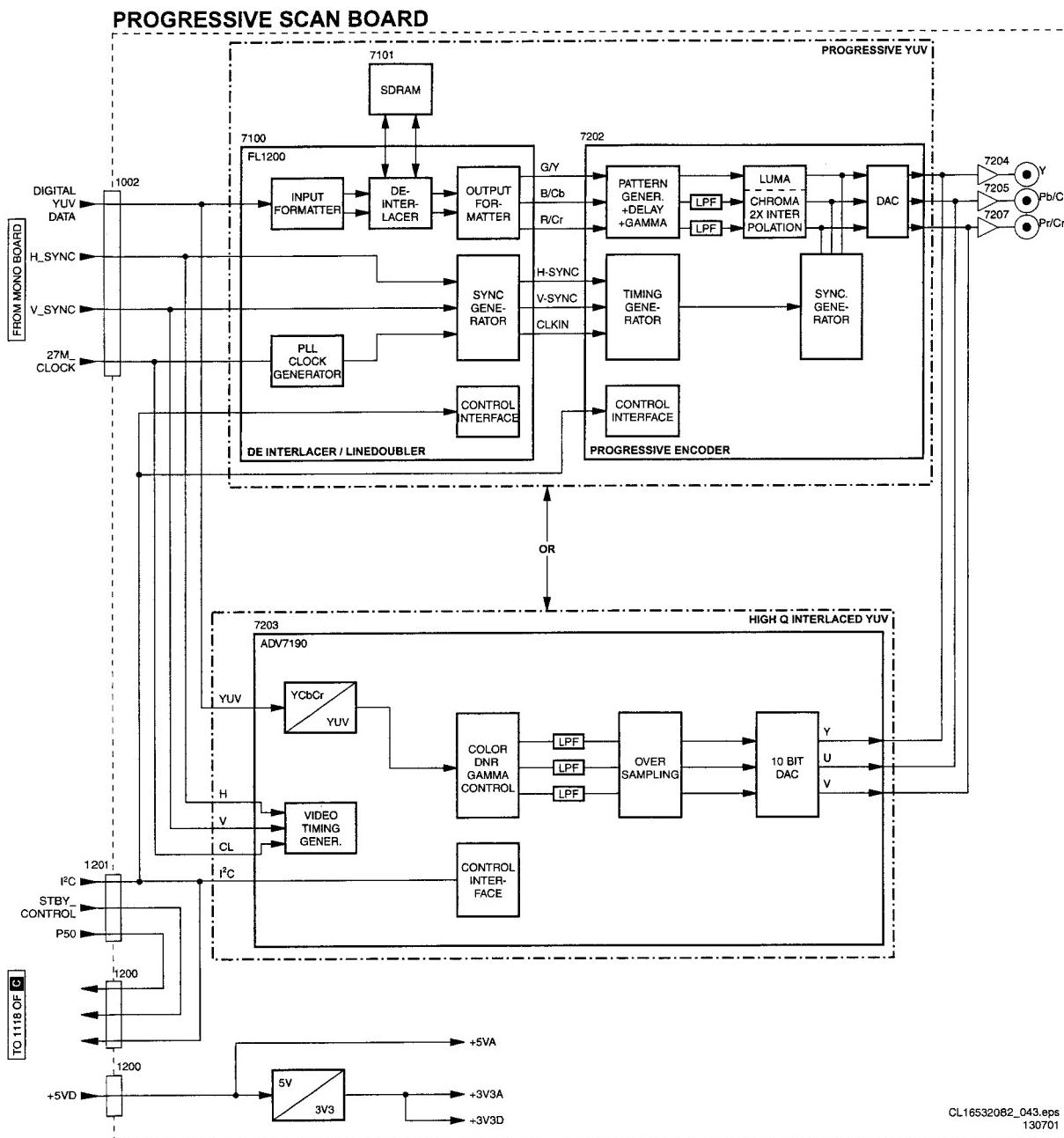


Figure 9-6

Some higher specified models offer progressive scan outputs. The Progressive Scan board consists of two separate circuits (not used together):

- Progressive YUV (for non-Europe versions).
- High Quality Interlaced YUV (for Europe).

**Progressive YUV**

This creates a picture signal with double the scan lines of a conventional interlaced picture, to create a noticeably sharper and smoother image. It offers higher picture resolution and eliminates virtually all motion artefacts. Even on large screens, the progressive scan lines are barely noticeable and it reduces picture flickering significant.

**High Quality Interlaced YUV**

This is still a conventional interlaced video, except that an integrated Digital Video Encoder (ADV7190) processes it. This IC encodes the eight bits digital YUV from the Monoboard, to output components YUV with improved

picture quality (reduce low amplitude and high frequency noise, SNR ratio).

Both have the Digital Crystal Clear feature, which allow you to fine-tune the following parameters:

- Gamma correction,
- Chroma and Luma delay.

CL16532082\_043.eps  
130701

## 9.6 Control and Display Panel

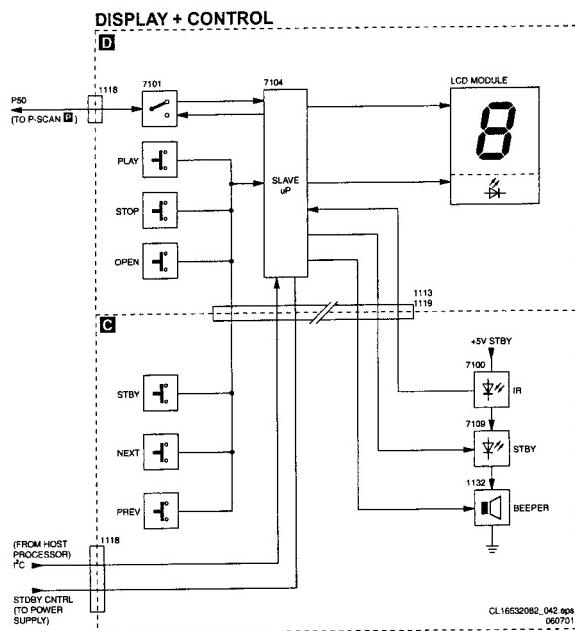


Figure 9-7

### 9.6.1 Control

#### Slave processor

The important component on this board is the (slave) microprocessor (item 7104). It works on an 8 MHz resonator (item 1110) and has a RESET circuit, which is triggered by the +5Vstby. After the RESET pulse, the STBY\_CONTROL line will release the reset of the host microprocessor (on the Monoboard).

In addition, when going to Standby, the slave processor will reset the host processor. When the slave processor receives the correct IR (or key) code to leave the Standby mode, it resets the host processor.

Other slave processor functions are:

- generation of a scanning grid for the keys,
- generation of the display grid and segment scanning,
- generation of square signal to generate the filament voltage for FTD displays (when used),
- inputs for RC5/6 and P50 (P50 controller is build in).

#### Standby LED

Transistor 7109 drives the Standby LED. When the STB\_LED signal from the slave processor is 'high', the LED is 'off'.

#### Key Matrix

When a key on the local keyboard is pressed, the signal at the scanning pins of the microprocessor goes from +5 V to 0 V.

#### Jog Shuttle(if present)

Some models (e.g. DVD952) are equipped with a jog-shuttle (via connector 1114). This jog shuttle functions just like a tact switch and is read via I/O port 4 of the slave processor.

#### IR Receiver

The IR controller in the slave processor handles both RC5 and RC6 signals. The logic is +5 V for 'high' and 0 V for 'low'.

#### P50 Interface

P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. For European sets, this communication goes via pin 10 of the SCART

connector, while for other regions (when present), this is a cinch connector. The slave processor controls the P50 bus.

### 9.6.2 Display

#### LCD Module (for Q-models)

The LCD module needs a supply voltage of +3 V, which is derived from the +5Vdigital signal via a 3 V zenerdiode (item 6101). The logic is +3.3 V for 'high' and 0 V for 'low'. All the logic and supply lines go via connector 1114.

The backlight LED for the LCD module needs a supply voltage of +3.5 V (via connector 1112). Transistor 7107 drives the LED, while resistors 3103 and 3105 are used as voltage dropping components.

#### FTD Display (for other models)

Some models (e.g. DVD952) have an FTD instead of an LCD. The slave processor has an internal square signal generator (42 kHz), to generate the AC filament voltage. TS7105 and 7106 amplify the square signal before it is applied to the display. The necessary power supply of -26 V is derived from the -40 V signal via voltage regulator 7112.

## 9.7 Abbreviation list

ADC	Analogue to Digital Converter
AM	Amplitude Modulation
AP	Asia Pacific
AV	External Audio Video
BE	Basic Engine
B/G	Monochrome TV system. Sound carrier distance is 5.5MHz
BC_AUX	Blue/Chroma input from AUX SCART
BC_TV	Blue/Chroma output to TV SCART
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
ComPair	Computer aided rePair
CD-DA	CD Digital Audio
CS	Chip Select
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DAIO	Digital Audio Input Output
D/K	Monochrome TV system. Sound carrier distance is 6.5MHz
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable ReadOnly Memory
EFM	Eight to Fourteen bit Modulation
EU	Europe
EXT	External (source), entering the set via SCART or Cinch
FBIN_AUX	Fast blanking input from AUX SCART
FBOUT_TV	Fast blanking output to TV SCART
FLASH	Flash memory
FM	Frequency Modulation
GIN_AUX	Green input from AUX SCART
GOUT_TV	Green output to TV SCART
HP	Headphone
I	Monochrome TV system. Sound carrier distance is 6.5MHz

I2C	Integrated IC bus	SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
I2S	Integrated IC Sound bus		
IF	Intermediate Frequency		
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.	SCL SCLK SDA SDRAM SECAM	Serial Clock I2C Audio serial bit clock Serial Data I2C Synchronous DRAM SEquence Couleur Avec Memoire.
IR	Infra Red		Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
IRQ	Interrupt Request		
LATAM	Latin America		
LED	Light Emitting Diode		
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	SLB_AUX SLB_TV	Slow blanking control signal from AUX SCART Slow blanking control signal to TV SCART
LIN_AUX	Audio input (left) from AUX SCART	S/PDIF	Sony Philips Digital InterFace
LIN_TV	Audio input (left) from TV SCART	SRAM	Static RAM
LOUT_AUX	Audio output (left) to AUX SCART	STBY	Standby
LOUT_TV	Audio output (left) to TV SCART	SVHS	Super Video Home System
LPCM	Linear PCM	SW	Software
LRCLK	Left/Right clock	THD	Total Harmonic Distortion
LS	Loudspeaker	TXT	Teletext
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz	$\mu$ P	Microprocessor
MACE	Mini All Compact Disc Engine	VCD	Video CD
MPEG	Motion Pictures Experts Group	VCR	Video Cassette Recorder
NC	Not Connected	Y/C	Luminance (Y) and Chrominance (C) signal
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.	YUV 0/6/12	Component video SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)		
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments		
OC	Open Circuit		
OPU	Optical Pick up Unit		
OSD	On Screen Display		
P50	Project 50 or Easy Link		
PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)		
PCB	Printed Circuit Board		
PCM	Pulse Code Modulation		
PCM_CLK	Audio system clock for DAC		
PCM_OUTx	Audio serial output data		
PIP	Picture In Picture		
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency		
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.		
RAM	Random Access Memory		
RC	Remote Control handset		
RC5	Remote Control system 5, signal from the remote control receiver		
RGB	Red Green Blue		
RIN_AUX	Red input from AUX SCART		
ROUT_TV	Red output to TV SCART		
ROM	Read Only Memory		
S2B	Serial to Basic, communication bus between host- and servo processor		
SAP	Second Audio Program		

## 10. Spare Parts List

<b>Q40 /0X1 Mech.</b>					
<b>Various</b>					
0001	3139 247 54182	FRONT COMPLETE Q40 EUR	2118	4822 124 21732	10μF 20% 25V
0002	3139 247 51831	BADGE PHILIPS ASSY SILVER	2119	3198 017 44740	0603 10V 470nF COL
0005	3139 247 54001	FRONT PLA Q40 EUR PNT PRT	2120	4822 126 14305	100nF 10% 16V 0603
0020	3139 247 53761	WINDOW Q40 US PNT PRT	2121	4822 124 11947	10μF 20% 16V
0030	3139 247 54021	BUTTON L Q40 EUR PNT PRT	2122	4822 122 33777	47pF 5% 63V
0035	3139 247 54031	BUTTON R Q40 EUR PNT PRT	2123	4822 126 14305	100nF 10% 16V 0603
0055	3139 247 54291	ASSY TRAY COVER DVD Q40	2124	4822 122 33777	47pF 5% 63V
0250	3139 247 54041	PLATE BACK Q40 EUR PNT PRT	2125	4822 126 13883	220pF 5% 50V
0300	3139 247 54081	COVER TOP Q40 EUR PNT PRT	2126	4822 126 13883	220pF 5% 50V
0350	3139 228 87712	PROD.ASSY RC19237002/01 PACKED	2127	4822 126 13883	220pF 5% 50V
0360▲	2422 070 98133	MAINSCORD EUR 1M5 BK B	2128	4822 124 11947	10μF 20% 16V
0360▲	4822 321 10713	MAINSCORD 300V EUR 1M5 BK B (FOR /051 ONLY)	2129	4822 126 14305	100nF 10% 16V 0603
0365	3103 308 92610	CABLE AUDIO 2X2RCA MALE 1.5MTR	2130	4822 126 14305	100nF 10% 16V 0603
0366	4822 321 61579	VIDEO-CABLE	2131	4822 126 14305	100nF 10% 16V 0603
0372	3111 170 21992	SCART CABLE (L=1.10M) BMS	2132	4822 126 14305	100nF 10% 16V 0603
0375	3139 246 11251	IFU DVD Q40/05X	2133	4822 126 14305	100nF 10% 16V 0603
0375	3139 246 11221	IFU DVD Q40/001 /021	2134	4822 126 14305	100nF 10% 16V 0603
1101	3104 157 11200	CWAS FLEX DVD 16 130 32S	2135	4822 126 14305	100nF 10% 16V 0603
1102	3104 157 11190	CWAS FLEX DVD 22 130 32S	2136	4822 124 40207	100μF 20% 25V
1108	3139 110 35821	FFC 08P/209/08P BD 1MMP FOLDED	2137	4822 124 40207	100μF 20% 25V
1111	3104 157 11200	CWAS FLEX DVD 16 130 32S	2138	4822 124 40207	100μF 20% 25V
1112	3104 157 11190	CWAS FLEX DVD 22 130 32S	2139	4822 124 40207	100μF 20% 25V
1113	3104 157 11190	CWAS FLEX DVD 22 130 32S	2140	4822 124 40207	100μF 20% 25V
1117	3139 110 35831	FFC 08P/241/08P BD 1MMP FOLDED	2141	4822 122 31765	100pF 2% 63V
<b>AV PWB DVDQ40 /0X1</b>					
<b>Various</b>					
1100	2422 025 16525	CON BM V 16P F 1.00 FFC 0.3 R	2142	4822 126 14305	100nF 10% 16V 0603
1101	4822 265 11154	52030-2210 (22P)	2143	4822 124 41584	100μF 20% 10V
1301	4822 265 11154	52030-2210 (22P)	2144	4822 124 41584	100μF 20% 10V
1400	2422 026 05088	CON BM CINCH H 6P F B	2145	4822 126 14305	100nF 10% 16V 0603
1401	2422 026 05189	CON BM CINCH H 4P F YEWRHD B	2146	4822 126 14305	100nF 10% 16V 0603
1402	2422 026 05188	CON BM MDIN H 3P F TCS7927 B	2147	4822 126 14305	100nF 10% 16V 0603
1403	2422 026 05191	CON BM CINCH H 3P F RDBUGN B	2148	4822 122 31765	100pF 2% 63V
1404	4822 267 31626		2149	4822 016 31020	0603 25V 1nF
<b>-I-</b>					
2100	4822 126 14305	100nF 10% 16V 0603	2150	4822 117 11152	4Ω7 5%
2101	4822 124 40184	1000μF 20% 10V	2151	4822 117 11152	4Ω7 5%
2102	4822 126 14305	100nF 10% 16V 0603	2152	4822 051 30759	75Ω 5% 0.062W
2103	4822 124 40184	1000μF 20% 10V	2153	4822 051 30759	75Ω 5% 0.062W
2104	4822 124 40207	100μF 20% 25V	2154	4822 051 30223	22k 5% 0.062W
2105	4822 126 14305	100nF 10% 16V 0603	2155	4822 051 30222	2k 5% 0.062W
2106	4822 124 40207	100μF 20% 25V	2156	4822 117 12902	8k2 1% 0.063W 0603
2107	3198 017 44740	0603 10V 470nF COL	2157	4822 051 30759	75Ω 5% 0.062W
2109	4822 124 40207	100μF 20% 25V	2158	4822 051 30759	75Ω 5% 0.062W
2110	4822 126 14305	100nF 10% 16V 0603	2159	4822 051 30153	15k 5% 0.062W
2111	4822 124 23052	100μF 20% 16V	2160	4822 051 30103	10k 5% 0.062W
2113	4822 126 13883	220pF 5% 50V	2161	4822 117 11152	4Ω7 5%
2114	4822 126 13883	220pF 5% 50V	2162	4822 051 30101	100Ω 5% 0.062W
2115	4822 126 13883	220pF 5% 50V	2163	4822 051 30101	100Ω 5% 0.062W
2116	4822 126 13883	220pF 5% 50V	2164	4822 051 30689	68Ω 5% 0.063W 0603
2117	4822 124 23052	100μF 20% 16V	2165	4822 051 30689	RC21 RST SM
			2166	4822 051 30479	47Ω 5% 0.062W
			2167	4822 051 30479	47Ω 5% 0.062W
			2168	4822 051 30479	47Ω 5% 0.062W
			2169	4822 051 30479	47Ω 5% 0.062W
			2170	4822 051 30479	47Ω 5% 0.062W
			2171	4822 051 30479	47Ω 5% 0.062W
			2172	4822 051 30479	47Ω 5% 0.062W
			2173	4822 051 30479	47Ω 5% 0.062W
			2174	4822 051 30479	47Ω 5% 0.062W
			2175	4822 051 30479	47Ω 5% 0.062W
			2176	4822 051 30479	47Ω 5% 0.062W
			2177	4822 051 30479	47Ω 5% 0.062W
			2178	4822 051 30479	47Ω 5% 0.062W
			2179	4822 051 30479	47Ω 5% 0.062W
			2180	4822 051 30479	47Ω 5% 0.062W
			2181	4822 051 30479	47Ω 5% 0.062W
			2182	4822 051 30479	47Ω 5% 0.062W
			2183	4822 051 30479	47Ω 5% 0.062W
			2184	4822 051 30479	47Ω 5% 0.062W
			2185	4822 051 30479	47Ω 5% 0.062W
			2186	4822 051 30479	47Ω 5% 0.062W
			2187	4822 051 30479	47Ω 5% 0.062W
			2188	4822 051 30479	47Ω 5% 0.062W
			2189	4822 051 30479	47Ω 5% 0.062W
			2190	4822 051 30479	47Ω 5% 0.062W
			2191	4822 051 30479	47Ω 5% 0.062W
			2192	4822 051 30479	47Ω 5% 0.062W
			2193	4822 051 30479	47Ω 5% 0.062W
			2194	4822 051 30479	47Ω 5% 0.062W
			2195	4822 051 30479	47Ω 5% 0.062W
			2196	4822 051 30479	47Ω 5% 0.062W
			2197	4822 051 30479	47Ω 5% 0.062W
			2198	4822 051 30479	47Ω 5% 0.062W
			2199	4822 051 30479	47Ω 5% 0.062W
			2200	4822 051 30479	47Ω 5% 0.062W

<b>Front PWB DVDQ40-50 /0X1</b>		<b>→+</b>	3074 4822 051 30103 10k 5% 0.062W
Various			3075 4822 051 30103 10k 5% 0.062W
1100 4822 276 13775 SWITCH	6100 4822 130 11397 BAS316	3076 4822 051 30103 10k 5% 0.062W	
1101 4822 276 13775 SWITCH	6101 9340 385 50115 DIO REG SM BZX284-C3V0 (PHSE)R	3077 4822 051 30103 10k 5% 0.062W	
1102 4822 276 13775 SWITCH	6104 4822 130 11397 BAS316	3078 4822 051 30103 10k 5% 0.062W	
1103 4822 276 13775 SWITCH	6200 9322 171 67682 LED VS LTL-2R7TWK (LITO) B	3079 4822 051 30103 10k 5% 0.062W	
1104 4822 276 13775 SWITCH		3080 4822 051 30103 10k 5% 0.062W	
1105 3139 248 70791 LCD MODULE WD-G0504V-7WLWA WTK		3081 4822 117 12925 47k 1% 0.063W 0603	
1110 2422 540 98518 RES CER 8MHz CSTS*MHz 03 A	7100 9322 155 22667	3086 4822 051 30102 1k 5% 0.062W	
1111 4822 276 13775 SWITCH	7101 4822 130 60511 BC847B	3092 4822 051 30101 100Ω 5% 0.062W	
1113 2422 025 16393 CON BM V 8P F 1.00 FFC 0.3 B	7102 4822 130 60511 BC847B	3096 4822 051 30103 10k 5% 0.062W	
1114 2422 025 16393 CON BM V 8P F 1.00 FFC 0.3 B	7104 3139 240 50161 IC SM TMP87CM48DF 3ER6	3098 4822 051 30103 10k 5% 0.062W	
1115 4822 267 10565 4P	7107 5322 130 60845 BC807-25	3100 4822 117 12139 22Ω 5% 0.062W	
1116 2422 025 16393 CON BM V 8P F 1.00 FFC 0.3 B	7108 4822 130 60511 BC847B	3104 4822 051 30101 100Ω 5% 0.062W	
1117 2422 025 16393 CON BM V 8P F 1.00 FFC 0.3 B	7109 4822 130 60373 BC856B	3105 4822 051 30101 100Ω 5% 0.062W	
1118 2422 025 08149 CON BM V 6P M 2.00 PH B (FOR DVDQ50 ONLY)	7110 4822 130 42804 BC817-25	3108 4822 051 30101 100Ω 5% 0.062W	
1119 4822 267 10637 B5B-PH-K (5P)		3109 4822 051 30101 100Ω 5% 0.062W	
1120 2422 025 16393 CON BM V 8P F 1.00 FFC 0.3 B		3110 4822 051 30101 100Ω 5% 0.062W	
1132 2422 527 01005 BUZZER PIEZO PKM13EPY-4002 Y		3112 4822 051 30103 10k 5% 0.062W	
II-		3113 4822 051 30101 100Ω 5% 0.062W	
1200 4822 126 13883 220pF 5% 50V		3114 4822 051 30101 100Ω 5% 0.062W	
2101 4822 126 13883 220pF 5% 50V		3115 4822 051 30103 10k 5% 0.062W	
2102 4822 124 40769 4.7μF 20% 100V		3116 4822 051 30101 100Ω 5% 0.062W	
2104 4822 124 23052 100μF 20% 16V		3117 4822 051 30103 10k 5% 0.062W	
2105 4822 126 14549 33nF 16V O603		3118 4822 051 30101 100Ω 5% 0.062W	
2106 4822 124 23052 100μF 20% 16V		3119 4822 051 30101 100Ω 5% 0.062W	
2114 4822 122 33761 22pF 5% 50V		3120 4822 117 12925 47k 1% 0.063W 0603	
2115 4822 122 33761 22pF 5% 50V		3145 4822 051 30101 100Ω 5% 0.062W	
2128 5322 126 11578 1nF 10% 50V 0603		3146 4822 051 30101 100Ω 5% 0.062W	
2129 4822 124 11947 10μF 20% 16V		3147 4822 051 30101 100Ω 5% 0.062W	
2201 4822 126 14549 33nF 16V O603		3150 4822 051 30101 100Ω 5% 0.062W	
2202 4822 126 14549 33nF 16V O603		3151 4822 051 30101 100Ω 5% 0.062W	
2203 5322 126 11578 1nF 10% 50V 0603		3152 4822 051 30101 100Ω 5% 0.062W	
III-		3154 4822 051 30101 100Ω 5% 0.062W	
2100 4822 126 13883 220pF 5% 50V		3155 4822 051 30101 100Ω 5% 0.062W	
2101 4822 126 13883 220pF 5% 50V		3156 4822 051 30101 100Ω 5% 0.062W	
2102 4822 124 40769 4.7μF 20% 100V		3157 4822 051 30101 100Ω 5% 0.062W	
2104 4822 124 23052 100μF 20% 16V		3174 4822 051 30102 1k 5% 0.062W	
2105 4822 126 14549 33nF 16V O603		3176 4822 051 30102 1k 5% 0.062W	
2106 4822 124 23052 100μF 20% 16V		3177 4822 051 30101 100Ω 5% 0.062W	
2114 4822 122 33761 22pF 5% 50V		3178 4822 051 30183 18k 5% 0.062W	
2115 4822 122 33761 22pF 5% 50V		3179 4822 051 30101 100Ω 5% 0.062W	
2128 5322 126 11578 1nF 10% 50V 0603		3180 4822 051 30101 100Ω 5% 0.062W	
2129 4822 124 11947 10μF 20% 16V		3182 4822 051 30102 1k 5% 0.062W	
2201 4822 126 14549 33nF 16V O603		3183 4822 051 30101 100Ω 5% 0.062W	
2202 4822 126 14549 33nF 16V O603		3187 4822 051 30105 1M 5% 0.062W	
2203 5322 126 11578 1nF 10% 50V 0603		3188 4822 051 30103 10k 5% 0.062W	
IV-		3189 4822 051 30101 100Ω 5% 0.062W	
3100 4822 051 30223 22k 5% 0.062W		4xxx 4822 051 10008 0Ω 5% 0.25W (1206)	
3101 4822 051 30273 27k 5% 0.062W		4xxx 4822 051 20008 0Ω 5% 0.25W (0805)	
3102 4822 117 12925 47k 1% 0.063W 0603			
3103 4822 051 30109 10Ω 5% 0.062W			
3104 4822 117 13632 100k 1% 0.0603 0.62W			
3105 4822 051 30109 10Ω 5% 0.062W			
3106 4822 051 30221 220Ω 5% 0.062W			
3109 4822 051 30472 4k7 5% 0.062W			
3110 4822 051 30472 4k7 5% 0.062W			
3112 4822 051 30472 4k7 5% 0.062W			
3113 4822 051 30472 4k7 5% 0.062W			
3114 4822 051 30472 4k7 5% 0.062W			
3115 4822 051 30472 4k7 5% 0.062W			
3116 4822 051 30472 4k7 5% 0.062W			
3121 4822 051 30472 4k7 5% 0.062W			
3122 4822 051 30109 10Ω 5% 0.062W			
3125 4822 051 30109 10Ω 5% 0.062W			
3130 4822 051 30109 10Ω 5% 0.062W			
3133 4822 051 30109 10Ω 5% 0.062W			
3135 4822 051 30331 330Ω 5% 0.062W			
3136 4822 051 30102 1k 5% 0.062W			
3137 4822 051 30103 10k 5% 0.062W			
3140 4822 051 30103 10k 5% 0.062W			
3141 4822 051 30103 10k 5% 0.062W			
3142 4822 051 30331 330Ω 5% 0.062W			
3144 4822 117 13632 100k 1% 0.0603 0.62W			
3150 4822 051 30472 4k7 5% 0.062W			
3151 4822 051 30472 4k7 5% 0.062W			
3152 4822 051 30472 4k7 5% 0.062W			
3160 4822 051 30332 3k3 5% 0.062W			
3161 4822 051 30332 3k3 5% 0.062W			
3162 4822 051 30332 3k3 5% 0.062W			
3163 4822 051 30332 3k3 5% 0.062W			
3164 4822 051 30332 3k3 5% 0.062W			
3170 4822 051 30103 10k 5% 0.062W			
3171 4822 051 30103 10k 5% 0.062W			
3174 4822 051 30472 4k7 5% 0.062W			
3175 4822 051 30181 180Ω 5% 0.062W			
3177 4822 051 30472 4k7 5% 0.062W			
III-			
3100 4822 051 30223 22k 5% 0.062W			
3101 4822 051 30273 27k 5% 0.062W			
3102 4822 117 12925 47k 1% 0.063W 0603			
3103 4822 051 30109 10Ω 5% 0.062W			
3104 4822 117 13632 100k 1% 0.0603 0.62W			
3105 4822 051 30109 10Ω 5% 0.062W			
3106 4822 051 30221 220Ω 5% 0.062W			
3109 4822 051 30472 4k7 5% 0.062W			
3110 4822 051 30472 4k7 5% 0.062W			
3112 4822 051 30472 4k7 5% 0.062W			
3113 4822 051 30472 4k7 5% 0.062W			
3114 4822 051 30472 4k7 5% 0.062W			
3115 4822 051 30472 4k7 5% 0.062W			
3116 4822 051 30472 4k7 5% 0.062W			
3121 4822 051 30472 4k7 5% 0.062W			
3122 4822 051 30109 10Ω 5% 0.062W			
3125 4822 051 30109 10Ω 5% 0.062W			
3130 4822 051 30109 10Ω 5% 0.062W			
3133 4822 051 30109 10Ω 5% 0.062W			
3135 4822 051 30331 330Ω 5% 0.062W			
3136 4822 051 30102 1k 5% 0.062W			
3137 4822 051 30103 10k 5% 0.062W			
3140 4822 051 30103 10k 5% 0.062W			
3141 4822 051 30103 10k 5% 0.062W			
3142 4822 051 30331 330Ω 5% 0.062W			
3144 4822 117 13632 100k 1% 0.0603 0.62W			
3150 4822 051 30472 4k7 5% 0.062W			
3151 4822 051 30472 4k7 5% 0.062W			
3152 4822 051 30472 4k7 5% 0.062W			
3160 4822 051 30332 3k3 5% 0.062W			
3161 4822 051 30332 3k3 5% 0.062W			
3162 4822 051 30332 3k3 5% 0.062W			
3163 4822 051 30332 3k3 5% 0.062W			
3164 4822 051 30332 3k3 5% 0.062W			
3170 4822 051 30103 10k 5% 0.062W			
3171 4822 051 30103 10k 5% 0.062W			
3174 4822 051 30472 4k7 5% 0.062W			
3175 4822 051 30181 180Ω 5% 0.062W			
3177 4822 051 30472 4k7 5% 0.062W			
IV-			
3072 4822 051 30103 10k 5% 0.062W			
3073 4822 051 30103 10k 5% 0.062W			

2116 4822 126 13883 220pF 5% 50V  
2117 4822 126 14305 100nF 10% 16V 0603

3100 4822 051 30272 2k7 5% 0.062W  
3101 4822 051 30221 220Ω 5% 0.062W  
3102 4822 116 83872 220Ω 5% 0.5W  
3103 4822 051 30272 2k7 5% 0.062W  
3104 4822 051 30759 75Ω 5% 0.062W  
3105 4822 051 30759 75Ω 5% 0.062W  
3106 4822 051 30759 75Ω 5% 0.062W  
3107 4822 051 30759 75Ω 5% 0.062W  
3108 4822 051 30759 75Ω 5% 0.062W  
3109 4822 051 30223 22k 5% 0.062W  
3110 4822 051 30221 220Ω 5% 0.062W  
3111 4822 051 30102 1k 5% 0.062W  
3112 4822 117 12925 47k 1% 0.063W 0603  
3113 4822 117 12925 47k 1% 0.063W 0603  
3114 4822 117 12925 47k 1% 0.063W 0603  
3115 4822 051 30472 4k7 5% 0.062W

6100 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6101 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6102 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6103 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6104 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6105 9340 548 63115 DIO REG SM PDZ15B (PHSE) R  
6106 9340 548 63115 DIO REG SM PDZ15B (PHSE) R

7100 9322 165 60668 IC SM LA7109 (TSAJ) R  
7401 4822 130 60511 BC847B  
7402 4822 130 60511 BC847B  
7403 4822 130 60373 BC856B  
7404 4822 130 60511 BC847B  
7405 4822 130 60373 BC856B  
7406 4822 130 60511 BC847B

### PSU PWB DVDQ40-50 /0X1

#### Various

0102▲ 2422 030 00304 SOC SUPP AC HOR MALE 9452 B  
0120▲ 4822 265 11253 FUSE HOLDER 2P  
0205 2422 025 08333 CON BM V 12P M 2.50 EH B  
0206 2422 025 11244 CON BM V 07P M 2.50 EH B  
0208 4822 267 10565 4P  
1120▲ 4822 253 30383 19181 (2,5A)

2102 4822 124 81151 22μF 50V  
2106▲ 4822 121 10711 100nF 20% 275V  
2107 5322 126 10511 1nF 5% 50V  
2108 4822 126 13694 68pF 1% 63V  
2113 5322 122 32654 63V 22nF PM10 R  
2121 2222 151 90054 EL 151 400V S 100μF  
2122 4822 121 70141 33nF 5% 400V  
2127 4822 126 12263 220pF 10%) 1KV  
2130▲ 4822 126 13841 1nF 20% 250V  
2131▲ 4822 126 13841 1nF 20% 250V  
2201 4822 126 14585 100nF 10% 50V  
2211 4822 124 41545 220μF 20% 16V  
2212 4822 126 14585 100nF 10% 50V  
2219 2020 021 91493 470μF 20% 25V  
2220 2020 021 91636 EL YXF 35V S 1000F PM20 B (FOR DVDQ50 ONLY)

2221 4822 124 41545 220μF 20% 16V  
2223 4822 126 14585 100nF 10% 50V  
2225 4822 124 81021 100μF 20% 16V  
2230 2020 012 93728 EL YK 10V S 2200μF PM20 B

2231 4822 124 81021 100μF 20% 16V  
2240 4822 124 41545 220μF 20% 16V  
2241 4822 124 81021 100μF 20% 16V  
2242 4822 126 14585 100nF 10% 50V

2250 4822 124 81151 22μF 50V  
2260 4822 124 81147 470μF 20% YK 25V  
2261 4822 126 14585 100nF 10% 50V  
2263 4822 124 40207 100μF 20% 25V  
2264 4822 126 14585 100nF 10% 50V  
2299 5322 122 32654 63V 22nF PM10 R

3102 4822 116 52182 15Ω 5% 0.5W  
3103 4822 117 11449 2k2 5% 0.1W 0805  
3104 4822 051 20339 33Ω 5% 0.1W  
3105 4822 116 52219 33Ω 5% 0.5W  
3108 4822 051 20223 22k 5% 0.1W  
3110 4822 051 20472 4k7 5% 0.1W  
3112 4822 051 20223 22k 5% 0.1W  
3113 4822 051 20332 3k3 5% 0.1W  
3116▲ 4822 052 10102 1k 5% 0.33W  
3120▲ 2122 550 00147 VDR DC 1M A/423V S MAX 775V B

3121 4822 117 12181 470Ω 20% 0.5W  
3122 4822 117 13515 2Ω7 3W AC03 WW  
3125 4822 051 20472 4k7 5% 0.1W  
3126 4822 116 80676 1Ω5 5% 0.5W  
3127 4822 116 80676 1Ω5 5% 0.5W  
3128 4822 116 80176 1Ω2 5% 0.5W  
3130▲ 4822 053 21106 10M 5% 0.5W  
3201 4822 116 52226 560Ω 5% 0.5W  
3202 4822 117 11142 2k4 1% 0.1W  
3203 4822 051 20479 47Ω 5% 0.1W  
3204 4822 117 11504 270Ω 1% 0.1W  
3205 4822 117 11144 3k9 1% 0.1W  
3206 5322 117 12487 1k RC12G 1% 0.125W  
3207 4822 051 20391 390Ω 5% 0.1W  
3208 4822 117 11503 220Ω 1% 0.1W  
3209 4822 117 12955 2k7 1% 0.1W 0805  
3220 4822 051 20102 1k 5% 0.1W  
3231 4822 051 20102 1k 5% 0.1W  
3242 4822 051 20472 4k7 5% 0.1W  
3243 4822 117 10837 100k 1% 0.1W  
3260 4822 051 20102 1k 5% 0.1W  
3262 4822 117 10833 10k 1% 0.1W  
3263 4822 117 11148 56k 1% 0.1W  
3276 4822 117 10834 47k 1% 0.1W

5121▲ 4822 157 53348 TER CHOKE ASSY CU15D3  
5131▲ 4822 146 10402 TRAFO CT395FANF/PVF  
5210 2422 535 94638 IND FXD LHL08 S 6U8 PM20 A  
5220 2422 535 94638 IND FXD LHL08 S 6U8 PM20 A  
5230 2422 535 94638 IND FXD LHL08 S 6U8 PM20 A  
5250 4822 157 11517 10μH 5% 2.3X3.4  
5260 2422 535 94638 IND FXD LHL08 S 6U8 PM20 A

6102 4822 130 42488 BYD33D  
6103 4822 130 30621 1N4148  
6106 4822 130 83757 BAS216  
6112 4822 130 31603 1N4006  
6113 4822 130 31603 1N4006  
6114 4822 130 31603 1N4006  
6115 4822 130 31603 1N4006  
6122 4822 130 34281 BZX79-B15  
6123 4822 130 34281 BZX79-B15  
6127 5322 130 34574 1N4004G  
6128 5322 130 34574 1N4004G  
6201 4822 130 10794 BZX284-C10  
6202 4822 130 83757 BAS216  
6221 4822 130 11596 BYW29EX-200  
6230 9322 161 78682 DIO REC SB360L-7024 (G100) B

6240 4822 130 42488 BYD33D  
6250 4822 130 42606 BYD33J  
6260 9340 559 53112 DIO REC BYW95C-24 (PHSE) B  
6261 5322 130 34574 1N4004G

7101 9322 164 16682 IC TY72011P2 (ONSE) L  
7102▲ 9322 149 04682 OPT CP TCET1102(G) (VISH) L  
7125 9322 157 37687 FET POW STP3NC60FP (STO0) L

7201 4822 209 81397 TL431CLPST  
7221 9322 163 53685 FET POW SM IRLML2502 (INR0) R  
7231 9322 163 53685 FET POW SM IRLML2502 (INR0) R  
7240 4822 130 40855 BC337  
7241 4822 130 60373 BC856B  
7249 4822 209 11079 LM79M05CT (NATIONAL)  
7263 4822 130 60511 BC847B

### VAL6011 DVDQ40-50 /0X1

#### Various

0001 9305 023 61101 VAL6011/01

### Q50 /0X1 MECH

#### Various

0001 3139 247 53591 FRONT COMPLETE Q50  
0005 3139 247 53991 FRONT AL Q50 EUR PNT PRT  
0010 3139 247 53671 FRONT PLA Q50 US PNT PRT  
0020 3139 247 53681 WINDOW Q50 US PNT PRT  
0030 3139 247 53711 BUTTON L Q50 US PNT PRT  
0035 3139 247 53721 BUTTON R Q50 US PNT PRT  
0055 3139 247 54281 ASSY TRAY COVER DVD870  
0070 3139 244 01461 LIGHT GUIDE Q50  
0250 3139 247 54071 PLATE BACK Q50 EUR PNT PRT  
0300 3139 247 53731 COVER TOP Q50 US PNT PRT  
0350 3139 228 87672 PROD.ASSY RC19237001/01 PACKED  
0360▲ 2422 070 98133 MAINSCORD EUR 1M5 BK B  
0360▲ 4822 321 10713 MAINSCORD 300V EUR 1M5 BK B (051 ONLY)  
0365 3103 308 92610 CABLE AUDIO 2X2RCA MALE 1.5MTR VIDEO-CABLE SCART CABLE (L=1.10M) BMS  
0366 4822 321 61579 3111 170 21992 SCART CABLE (L=1.10M) BMS  
0375 3139 246 11211 IFU DVD Q50/05X  
0375 3139 246 11181 IFU DVD Q50/00X  
1101 3104 157 11200 CWAS FLEX DVD 16 130 32S  
1102 3104 157 11190 CWAS FLEX DVD 22 130 32S  
1108 3139 110 35821 FFC 08P/20/08P BD 1MMP FOLD ED  
1111 3104 157 11200 CWAS FLEX DVD 16 130 32S  
1112 3104 157 11190 CWAS FLEX DVD 22 130 32S  
1113 3104 157 11190 CWAS FLEX DVD 22 130 32S  
1114 3139 110 35811 FFC 22P/10/22P AD 1MMP FOLD ED  
1117 3139 110 35831 FFC 08P/24/08P BD 1MMP FOLD ED

### AV PWB DVDQ50 /001 /021 /051

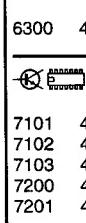
#### Various

1100 2422 025 16525 CON BM VI 6P F 1.00 FFC 0.3 R  
1101 4822 265 11154 52030-221 (22P)  
1301 4822 265 11154 52030-221 (22P)  
1400 2422 026 05088 CON BM CNJCH H 6P F B  
1401 2422 026 05189 CON BM CNJCH H 4P F YEWRD;  
1402 2422 026 05188 CON BM ND IN H 3P F TCS7927 E  
1404 4822 267 31626

#### -II-

2100 4822 126 14305 100nF 10% 16V 0603  
2101 4822 124 40184 1000μF 20% 10V  
2102 4822 126 14305 100nF 10% 16V 0603

2103	4822 124 40207	100μF 20% 25V	3111	4822 117 12902	8k2 1% 0.063W 0603	7202	4822 130 42804	BC817-25
2104	4822 124 40207	100μF 20% 25V	3112	4822 051 30759	75Ω 5% 0.062W	7203	4822 130 42804	BC817-25
2105	4822 126 14305	100nF 10% 16V 0603	3113	4822 051 30223	22k 5% 0.062W	7204	4822 130 42804	BC817-25
2106	4822 124 40207	100μF 20% 25V	3114	4822 051 30759	75Ω 5% 0.062W	7205	4822 130 42804	BC817-25
2107	3198 017 44740	0603 10V 470nF COL	3115	4822 051 30153	15k 5% 0.062W	7300	4822 130 60511	BC847B
2109	4822 124 40207	100μF 20% 25V	3116	4822 051 30103	10k 5% 0.062W	7302	4822 130 42804	BC817-25
2110	4822 126 14305	100nF 10% 16V 0603	3118	4822 117 11152	407 5%	7305	4822 130 42804	BC817-25
2111	4822 124 40184	1000μF 20% 10V	3120	4822 051 30101	100Ω 5% 0.062W	7400	9322 165 60668	IC SM LA7109 (TSAJ) R
2113	4822 126 13883	220pF 5% 50V	3121	4822 051 30101	100Ω 5% 0.062W	7401	4822 209 16978	LF33CV
2114	4822 126 13883	220pF 5% 50V	3122	4822 051 30689	68Ω 5% 0.063W 0603	7402	4822 130 10845	GP1F32T
2115	4822 126 13883	220pF 5% 50V			RC21 RST SM	7502	9352 640 74118	IC SM UDA1334TS/NI (PHSE) R
2116	4822 126 13883	220pF 5% 50V	3200	4822 051 30479	47Ω 5% 0.062W	7503	4822 209 30095	LM833D
2117	4822 124 23052	100μF 20% 16V	3201	4822 051 30479	47Ω 5% 0.062W	7504	9352 640 74118	IC SM UDA1334TS/NI (PHSE) R
2118	4822 124 21732	10μF 20% 25V	3204	4822 117 12902	8k2 1% 0.063W 0603	7505	4822 209 30095	LM833D
2119	3198 017 44740	0603 10V 470nF COL	3205	4822 117 12902	8k2 1% 0.063W 0603	7600	9965 000 06290	AD1852 (DAC 24BIT/ 96KHZ)
2120	4822 126 14305	100nF 10% 16V 0603	3208	4822 051 30103	10k 5% 0.062W	7601	9322 067 00668	IC SM OP275GS (ANA0) R
2121	4822 124 11947	10μF 20% 16V	3209	4822 051 30472	4k7 5% 0.062W	7602	4822 209 30095	LM833D
2122	4822 122 33777	47pF 5% 63V	3210	4822 051 30472	4k7 5% 0.062W	7605	4822 209 30095	LM833D
2123	4822 126 14305	100nF 10% 16V 0603	3212	4822 051 30472	4k7 5% 0.062W	7606	5322 209 14481	HEF4053BT
2124	4822 122 33777	47pF 5% 63V	3213	4822 051 30472	4k7 5% 0.062W			
2125	4822 126 13883	220pF 5% 50V	3216	4822 051 30103	10k 5% 0.062W			
2126	4822 126 13883	220pF 5% 50V	3217	4822 117 12902	8k2 1% 0.063W 0603			
2127	4822 126 13883	220pF 5% 50V	3219	4822 051 30103	10k 5% 0.062W			
2130	4822 124 41584	100μF 20% 10V	3220	4822 051 30272	2k7 5% 0.062W			
2202	4822 124 80231	47μF 20% 16V	3221	4822 051 30272	2k7 5% 0.062W			
2204	4822 124 80231	47μF 20% 16V	3222	4822 051 30272	2k7 5% 0.062W			
2209	4822 124 11947	10μF 20% 16V	3223	4822 051 30471	470Ω 5% 0.062W			
2210	4822 124 11947	10μF 20% 16V	3224	4822 051 30221	220Ω 5% 0.062W			
2213	4822 124 11947	10μF 20% 16V	3225	4822 051 30471	470Ω 5% 0.062W			
2214	4822 124 11947	10μF 20% 16V	3226	4822 117 12902	8k2 1% 0.063W 0603			
2215	4822 126 14305	100nF 10% 16V 0603	3227	4822 051 30471	470Ω 5% 0.062W			
2216	4822 126 14305	100nF 10% 16V 0603	3228	4822 051 30221	220Ω 5% 0.062W			
2219	4822 126 14305	100nF 10% 16V 0603	3229	4822 051 30471	470Ω 5% 0.062W			
2220	4822 126 14305	100nF 10% 16V 0603	3230	4822 051 30272	2k7 5% 0.062W			
2221	4822 126 14305	100nF 10% 16V 0603	3231	4822 051 30272	2k7 5% 0.062W			
2223	4822 126 14305	100nF 10% 16V 0603	3232	4822 051 30272	2k7 5% 0.062W			
2224	4822 122 31765	100pF 2% 63V	3233	4822 051 30103	10k 5% 0.062W			
2225	4822 122 31765	100pF 2% 63V	3234	4822 051 30103	10k 5% 0.062W			
2228	4822 122 31765	100pF 2% 63V	3235	4822 051 30103	10k 5% 0.062W			
2230	4822 126 14305	100nF 10% 16V 0603	3236	4822 051 30103	10k 5% 0.062W			
2231	4822 126 14305	100nF 10% 16V 0603	3237	4822 051 30103	10k 5% 0.062W			
2234	4822 126 14305	100nF 10% 16V 0603	3238	4822 051 30103	10k 5% 0.062W			
2235	4822 126 14305	100nF 10% 16V 0603	3300	4822 117 12903	1k8 1% 0.063W 0603			
2238	4822 124 40207	100μF 20% 25V	3301	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2239	4822 124 40207	100μF 20% 25V	3302	4822 051 30471	470Ω 5% 0.062W			
2240	4822 124 40207	100μF 20% 25V	3303	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2242	4822 124 40207	100μF 20% 25V	3304	4822 051 30272	2k7 5% 0.062W			
2243	4822 126 13909	680pF 10% 50V	3308	4822 117 12903	1k8 1% 0.063W 0603			
2245	4822 126 13909	680pF 10% 50V	3309	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2246	3198 016 31020	0603 25V 1nF	3311	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2247	3198 016 31020	0603 25V 1nF	3314	4822 051 30103	10k 5% 0.062W			
2248	3198 016 31020	0603 25V 1nF	3315	4822 051 30103	10k 5% 0.062W			
2249	3198 016 31020	0603 25V 1nF	3317	4822 051 30222	2k2 5% 0.062W			
2251	4822 122 33761	22pF 5% 50V	3318	4822 117 12903	1k8 1% 0.063W 0603			
2306	4822 126 14305	100nF 10% 16V 0603	3319	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2307	4822 126 14305	100nF 10% 16V 0603	3320	4822 051 30562	5k6 5% 0.063W 0603 RC21			
2308	4822 126 14305	100nF 10% 16V 0603	3321	4822 051 30471	470Ω 5% 0.062W			
2309	3198 016 38210	0603 25V 820P COL	3322	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2310	4822 126 14241	0603 50V 330P COL R	3323	4822 051 30272	2k7 5% 0.062W			
2311	4822 124 22339	100UE 16V	3324	4822 117 12903	1k8 1% 0.063W 0603			
2312	4822 126 14305	100nF 10% 16V 0603	3325	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2313	3198 016 38210	0603 25V 820P COL	3327	4822 051 30472	4k7 5% 0.062W			
2314	4822 126 14241	0603 50V 330P COL R	3328	2322 704 62002	RST SM 0603 RC22H 2k PM1 R			
2316	4822 126 13909	680pF 10% 50V	3331	4822 051 30103	10k 5% 0.062W			
2317	4822 126 14305	100nF 10% 16V 0603	3334	4822 051 30472	4k7 5% 0.062W			
2318	3198 016 38210	0603 25V 820P COL	3335	4822 051 30272	2k7 5% 0.062W			
2319	4822 126 14241	0603 50V 330P COL R	5103	4822 157 70601	100μH (920927085A)			
2320	4822 124 11947	10μF 20% 16V						
2321	4822 124 22339	100UE 16V	6300	4822 130 83649	1SS355			



7101	4822 130 60511	BC847B
7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25

3200	4822 051 30101	100Ω 5% 0.062W
3201	4822 051 30101	100Ω 5% 0.062W
3202	4822 051 30103	10k 5% 0.062W
3203	4822 051 30103	10k 5% 0.062W
3204	4822 051 30103	10k 5% 0.062W
3213	4822 117 11152	4Ω7 5%
3214	4822 051 20008	0Ω jumper . (0805)
3215	4822 051 30472	4k7 5% 0.062W
3229	4822 051 30759	75Ω 5% 0.062W
3230	4822 117 11817	1k2 1% 1/16W
3231	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3232	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3233	5322 117 13036	1k2 1% 0.063W 0603 RC22H

3234	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3235	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3236	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3237	4822 051 30759	75Ω 5% 0.062W
3238	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3239	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3240	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3241	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3242	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3243	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3244	4822 117 11817	1k2 1% 1/16W
3246	4822 051 30759	75Ω 5% 0.062W
3247	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3248	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3249	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3250	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3251	5322 117 13036	1k2 1% 0.063W 0603 RC22H
3252	5322 117 13036	1k2 1% 0.063W 0603 RC22H
4xxx	4822 051 10008	0Ω 5% 0.25W (1206)
4xxx	4822 051 20008	0Ω 5% 0.25W (0805)

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|      |                |                   |
|------|----------------|-------------------|
| 5202 | 4822 157 11828 | 22U 20% SM 0805   |
| 5203 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 5204 | 4822 157 71593 | 10μH 10%          |
| 5205 | 4822 157 11828 | 22U 20% SM 0805   |
| 5206 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 5207 | 4822 157 71593 | 10μH 10%          |
| 5208 | 4822 157 11828 | 22U 20% SM 0805   |
| 5209 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 5210 | 4822 157 71593 | 10μH 10%          |

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④ E

|      |                |                              |
|------|----------------|------------------------------|
| 7201 | 4822 209 17398 | LD1117DT33                   |
| 7203 | 9322 168 16671 | IC SM ADV7190KST<br>(ANA0) Y |
| 7204 | 9322 167 49685 | IC SM AD8061ART (ANA0)<br>R  |
| 7205 | 9322 167 49685 | IC SM AD8061ART (ANA0)<br>R  |
| 7207 | 9322 167 49685 | IC SM AD8061ART (ANA0)<br>R  |